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DESIGN-FOR-REPAIR CONCEPT DEFINITION VOLUME II. DETAILED ANALYS--ETC(U)
AUG 79 F A GERKIN, J L GREEN, J M KING F33615-78-C-1461
UNCLASSIFIED MSG-9285-VOL-2 AFAL-TR-79-1130-VOL-2 NL

1 OF 3
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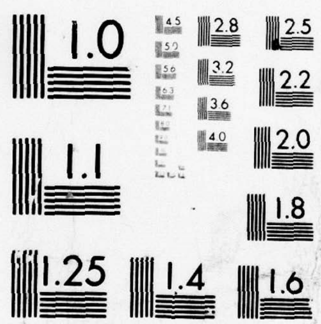
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AFAL-TR-79-1130

DESIGN-FOR-REPAIR CONCEPT DEFINITION

Hughes Aircraft Company
Support Systems
Canoga Park, California 91304

AUGUST 1979

VOLUME II: DETAILED ANALYSES, AFAL-TR-79-1130

Final Report for Period 15 August 1978 – 15 May 1979

Approved for Public Release; Distribution Unlimited

Air Force Avionics Laboratory
Air Force Wright Aeronautical Laboratories
Air Force Systems Command
Wright-Patterson Air Force Base, Ohio 45433

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This technical report has been reviewed and is approved for publication.

Don L Lowdermilk

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System Avionics Division

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This technical report is also composed of the following:

1) Volume I, Technical Report
2) Volume III, Field Evaluation Reports

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

Design-for-Repair	Maintainability
Repairability	Cost Effectiveness
Availability	Design Process
Supportability	

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

Current techniques used in the equipment design process have not improved avionics repairability to the level expected. This limitation on repairability results primarily from the maintenance concepts currently implemented and repairability techniques being "designed in" after the system design has been frozen. Subsequently, maintainability, repairability, availability, and supportability of AF equipment suffers during its inter-usable lifetime. The objective of this study was to identify and define Design-for-Repair Concepts which show the greatest potential for enhancing Air Force avionic

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Block 20 Continued:

maintenance. By identifying design and support problems associated with existing systems, design features required for implementation of an appropriate Design-for-Repair Concept or Concepts were then identified. This technical report includes the approach taken and the rationale on which Design-for-Repair Concepts were selected. The work conducted under this effort and the selected Design-for-Repair Concepts will formulate the baseline for the following phase of the effort, Design-for-Repair Methodology Guideline Development. This Phase II effort will provide the design engineer with methodologies and guidelines for designing repairability and maintainability into avionic equipment during the early design phases. The Air Force Program Monitor was Lt. Don L. Lowdermilk, System Evaluation Group, Avionic Systems Engineering Branch (AFAL/AAA-3).

PREFACE

The Design-For-Repair Concept Definition technical report is prepared in three separately bound books. Supportive analyses details for the technical report are contained in the appendices.

Volume I — Technical Report

Volume II — Detailed Analyses

Volume III — Field Evaluation Reports

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SECTION I

MAINTAINABILITY ANALYSIS

F15 RADAR (APG-63)
ORGANIZATIONAL LEVEL
MAINTAINABILITY SUMMARY

01/11/79

LOCATION: SUMMARY
FLIGHT HOURS: 72289.0

TIME FRAME: 18MO
END OF MONTH AIRCRAFT INVENTORY: 82

SORTIES:53274

LRU	FLIGHT LINE MAINT	MEAN TIME BETWEEN MAINT (FH)	NUMBER CND ACTIONS	CND AS % OF LINE MAINT	MEAN MAINT TIME CND (HRS)	NUMBER CANNIB ACTIONS	CANN AS % OF LINE MAINT	MEAN MAINT TIME CANN (HRS)	NUMBER REPAIR IN PLACE ACTIONS	MEAN MAINT TIME RIPS (HRS)	NUMBER REMOVAL (DEMAND) ACTIONS	MEAN MAINT TIME REMOVL (HRS)	NUMBER OTHER ACTIONS	MEAN MAINT TIME OTHER (HRS)	LINE MAINT MAN HOURS
0	5577	13.0	2783	49.9	2.9	5	0.1	3.8	222	3.8	40	3.7	3011	4.4	22461.2
1	516	140.1	1	0.2	2.0	104	20.2	3.4	10	2.5	351	2.4	214	2.4	1734.2
6	38	1902.3	1	2.6	2.0	3	7.9	1.9	15	2.1	14	1.5	9	1.3	73.0
11	1359	53.2	9	0.7	2.0	210	15.5	5.1	79	2.5	1079	4.6	435	3.5	7730.0
12	7	10327.0	0	0.0	0.0	1	14.3	6.0	1	1.0	5	3.1	2	0.5	[illegible]
19	10	7228.9	0	0.0	0.0	3	30.0	4.7	2	1.0	4	1.6	0	0.0	22.5
20	2	36144.3	0	0.0	0.0	0	0.0	0.0	1	3.0	0	0.0	0	0.0	5.9
21	7	10327.0	0	0.0	0.0	1	14.3	2.8	2	1.5	5	1.0	0	0.0	10.6
22	1298	55.7	4	0.3	1.4	499	38.4	3.2	43	1.4	620	2.8	469	2.5	4527.6
23	13	5560.7	0	0.0	0.0	1	7.7	[illegible]	[illegible]	0.0	7	[illegible]	7	1.4	[illegible]
31	784	92.2	11	1.4	2.8	87	11.1	[illegible]	[illegible]	[illegible]	609	[illegible]	273	[illegible]	[illegible]
39	1308	55.3	4	0.3	1.9	511	39.1	[illegible]	21	3.7	960	2.8	458	[illegible]	[illegible]
41	1010	71.6	8	0.8	5.4	146	14.5	[illegible]	[illegible]	3.7	[illegible]	[illegible]	350	[illegible]	[illegible]
81	1955	37.0	5	0.3	2.3	510	26.1	3.3	51	[illegible]	1237	2.5	[illegible]	[illegible]	[illegible]
541	118	612.6	4	3.4	1.2	4	3.4	[illegible]	49	2.1	52	2.4	30	1.9	299.1
610	1344	53.8	3	0.2	2.6	323	24.0	3.1	25	4.1	[illegible]	2.5	[illegible]	[illegible]	4484.6
721	6	12048.1	0	0.0	0.0	0	0.0	0.0	0	0.0	3	2.9	3	[illegible]	16.6
722	3	24096.3	0	0.0	0.0	0	0.0	0.0	0	0.0	2	[illegible]	2	[illegible]	[illegible]
723	26	2780.3	2	7.7	5.0	0	0.0	0.0	12	[illegible]	6	3.7	8	[illegible]	154.2
724	4	18072.2	0	0.0	0.0	0	0.0	0.0	2	1.6	1	1.5	2	2.0	8.7
725	2	36144.3	0	0.0	0.0	0	0.0	0.0	0	0.0	2	[illegible]	1	1.5	5.0
726	1	72288.2	0	0.0	0.0	0	0.0	0.0	3	17.2	1	5.0	0	0.0	[illegible]
727	5	14457.8	0	0.0	0.0	0	0.0	0.0	3	5.4	1	21.0	1	6.0	[illegible]
888	52	1390.2	0	0.0	0.0	3	5.8	4.0	22	5.2	12	4.1	14	2.2	205.5
	15445	4.7	2835	18.4	2.9	2411	15.6	3.6	637	3.5	6358	3.4	6680	3.5	63942.6

CND RATE (% OF SORTIES)---------: 5.3

MEAN TIME BETWEEN DEMANDS-------: 11.4

SORTY SUCCESS RATE (%)----------: 89.4

WHNCDP = 5673.0

F15 RADAR (APG-63)
INTERMEDIATE LEVEL
LRU MAINTAINABILITY SUMMARY

01/11/79

LOCATION: SUMMARY
FLIGHT HOURS: 72289.0

TIME FRAME: 18MO
END OF MONTH AIRCRAFT INVENTORY: 82

SORTIES: 53274

LRU	WUC	NUMBER OF SHOP ARRIVALS	MEAN TIME BETWEEN ARRIVALS	NUMBER SHOP NO FAULTS	PERCENT OF NO FAULT ARRIVALS	MEAN TURN AROUND TIME (DAYS)	NUMBER SHOP REPAIRS	MEAN TURN AROUND REPAIR (DAYS)	MEAN TIME TO REPAIR (HRS)	NUMBER NRTS	MEAN TURN AROUND NRTS (DAYS)	SHOP MAINTENANCE MAN HOURS
1	74FJ0	269	248.7	22	8.2	107.8	181	98.8	14.1	62	33.8	5853.8
11	74FA0	859	84.2	196	22.8	14.8	718	31.4	11.3	78	35.5	17871.9
22	74FC0	575	125.7	66	11.5	50.3	360	146.6	18.3	121	144.2	15905.2
31	74FU0	590	122.5	89	15.1	3.2	500	36.1	13.6	57	30.2	14145.5
39	74FS0	617	117.2	86	13.9	21.6	316	103.8	16.7	219	32.1	12500.2
41	74FF0	464	155.8	100	21.6	9.4	175	63.3	9.4	258	20.2	4594.9
81	74FQ0	969	74.6	371	38.3	9.9	500	64.7	8.4	174	89.2	11643.0
541	74FK0	42	1721.2	15	35.7	75.3	29	132.7	3.2	3	4.7	243.4
610	74FH0	689	104.9	220	31.9	11.4	460	32.8	6.9	69	60.6	7457.3
		5074	14.2	1165	23.0	16.3	3239	63.7	11.9	1041	53.8	90215.2

NRTS RATE (%)------------------------: 20.5

MEAN TIME BETWEEN REPAIR (MTBR)-: 19.3

MEAN TURN AROUND TIME (MTAT)----: 51.2

CONFIRMED FAILURES PER FLIGHT---: 0.070

XNRTS2 = 165.0

F15 RADAR (APG-63)
INTERMEDIATE LEVEL
SRU MAINTAINABILITY SUMMARY

01/11/79

LOCATION: SUMMARY
FLIGHT HOURS: 72289.0

TIME FRAME: 18MO
END OF MONTH AIRCRAFT INVENTORY: 82

SORTIES: 53274

LRU	WUC	PART NUMBER	NUMBER OF SHOP DEMANDS	MEAN TIME BETWEEN DEMANDS	NUMBER SHOP NO FAULT	MEAN TURN AROUND TIME NO FAULT	NUMBER SHOP REPAIRS	MEAN TURN AROUND TIME (DAYS)	MEAN TIME TO REPAIR (HRS)	NUMBER NRTS	MEAN TURN AROUND TIME (DAYS)	SHOP MAINTENANCE MAN HOURS
1	74FJ#	255362	1	72288.9	0	0.0	0	0.0	0.0	1	12.0	0.2
1	74FJB	3262210-15	41	1763.1	0	0.0	0	0.0	0.0	41	36.6	45.6
1	74FJC	3262250-6	53	1363.9	0	0.0	0	0.0	0.0	53	81.7	53.2
1	74FJD	3262270-3	47	1538.1	0	0.0	0	0.0	0.0	47	46.1	56.3
1	74FJE	3262370-1	9	8032.1	0	0.0	0	0.0	0.0	9	40.2	11.7
1	74FJJ	3262590-5	5	14457.8	0	0.0	0	0.0	0.0	5	17.4	7.0
1	74FJD	3464600-1	34	2126.1	0	0.0	0	0.0	0.0	34	13.1	31.5
1	74FJE	3464700	34	2126.1	0	0.0	0	0.0	0.0	34	45.3	37.8
11	74FA#	E21515P5	1	72288.9	0	0.0	0	0.0	0.0	1	2.0	0.5
11	74FA4	258778	59	1225.2	0	0.0	0	0.0	0.0	59	59.5	60.8
11	74FAB	3249015	9	8032.1	0	0.0	0	0.0	0.0	9	4.8	8.3
11	74FAS	3249478-1	2	36144.5	0	0.0	0	0.0	0.0	2	12.0	1.5
11	74FAS	3249485-3	19	3804.7	0	0.0	0	0.0	0.0	19	115.1	15.2
11	74FAQ	3334041-2	36	2008.0	0	0.0	0	0.0	0.0	36	36.9	34.8
11	74FAF	3334045-2	145	498.5	0	0.0	0	0.0	0.0	145	28.1	144.0
11	74FAC	3334080-3	1	72288.9	0	0.0	0	0.0	0.0	1	6.0	0.3
11	74FAG	3334123-2	143	505.5	1	3.0	0	0.0	0.0	142	21.9	151.6
11	74FAX	3334210-4	149	485.2	1	20.0	0	0.0	0.0	148	56.4	182.7
11	74FAC	3334230-1	75	963.9	0	0.0	0	0.0	0.0	75	24.8	90.4
11	74FAD	3334270-2	31	2331.9	0	0.0	2	38.2	4.2	29	84.2	49.2
11	74FA?	390555-6	2	36144.5	0	0.0	0	0.0	0.0	2	531.0	1.0
11	74FAR	603H	3	24096.3	0	0.0	0	0.0	0.0	3	1.7	4.1
22	74FC#	MD35X15	1	72288.9	0	0.0	0	0.0	0.0	1	8.0	10.0
22	74FC*	3262208-3	4	18072.2	0	0.0	0	0.0	0.0	4	27.0	7.5
22	74FCS	3262208-5	1	72288.9	0	0.0	0	0.0	0.0	1	144.0	0.5
22	74FCD	3271100-4	53	1363.9	0	0.0	0	0.0	0.0	53	62.7	89.8
22	74FCG	3271120-1	131	551.8	0	0.0	0	0.0	0.0	131	83.6	146.4
22	74FCE	3271320	3	24096.3	0	0.0	0	0.0	0.0	3	6.3	2.7
22	74FCB	3271360-4	11	6571.7	0	0.0	0	0.0	0.0	11	17.9	14.6
22	74FCJ	3271370-10	153	472.5	0	0.0	0	0.0	0.0	153	107.5	155.9
22	74FCP	3359910	109	663.2	0	0.0	0	0.0	0.0	109	88.6	107.7
22	74FCE	3359930	30	2409.6	0	0.0	0	0.0	0.0	30	89.3	33.8
22	74FC#	927045-18	1	72288.9	0	0.0	0	0.0	0.0	1	1142.0	1.0
31	74FXA	P810758	8	9036.1	0	0.0	0	0.0	0.0	8	25.5	4.9
31	74FUB	253957-1	36	2008.0	0	0.0	0	0.0	0.0	36	36.1	39.7
31	74FUE	253958	7	10327.0	0	0.0	0	0.0	0.0	7	5.1	4.5
31	74FWA	255325-2	14	5163.5	0	0.0	1	14.0	0.5	13	8.1	23.7
31	74FWD	255326-1	14	5163.5	0	0.0	0	0.0	0.0	14	2.1	13.5

LRU	WUC	PART NUMBER	NUMBER OF SHOP DEMANDS	MEAN TIME BETWEEN DEMANDS	NUMBER SHOP NO FAULT	MEAN TURN AROUND TIME NO FAULT	NUMBER SHOP REPAIRS	MEAN TURN AROUND TIME (DAYS)	MEAN TIME TO REPAIR (HRS)	NUMBER NRTS	MEAN TURN AROUND TIME (DAYS)	SHOP MAINTENANCE MAN HOURS
31	74FVZ	258621-1	7	10327.0	0	0.0	0	0.0	0.0	7	173.8	5.9
31	74FV3	258622-1	3	24096.3	0	0.0	0	0.0	0.0	3	1.0	2.1
31	74FVK	258684-3	15	4819.3	0	0.0	0	0.0	0.0	15	3.3	16.0
31	74FVH	258684-5	4	18072.2	0	0.0	0	0.0	0.0	4	1.4	3.8
31	74FWS	3263934-1	15	4819.3	0	0.0	0	0.0	0.0	15	17.0	11.8
31	74FUL	3271403-1	2	36144.5	0	0.0	0	0.0	0.0	2	534.5	1.6
31	74FUW	3271404-1	1	72288.9	0	0.0	0	0.0	0.0	1	1069.0	0.5
31	74FUP	3271413-1	13	5560.7	0	0.0	0	0.0	0.0	13	6.8	11.2
31	74FVH	3271634-1	3	24096.3	0	0.0	0	0.0	0.0	3	2.2	2.8
31	74FWV	3377300	77	938.8	0	0.0	1	70.5	2.2	76	45.3	99.5
31	74FUA	3402050-3	96	753.0	0	0.0	0	0.0	0.0	96	20.9	149.2
31	74FVH	3402062-1	16	4518.1	0	0.0	0	0.0	0.0	16	80.8	19.8
31	74FVX	3402065	18	4016.1	0	0.0	0	0.0	0.0	18	10.7	15.3
31	74FVT	3402080	12	6024.1	0	0.0	0	0.0	0.0	12	29.6	11.9
31	74FVQ	3402090-1	32	2259.0	0	0.0	0	0.0	0.0	32	9.8	24.8
31	74FUS	3402133	5	14457.8	0	0.0	0	0.0	0.0	5	3.0	4.5
31	74FXA	927305-1B	2	36144.5	0	0.0	0	0.0	0.0	2	3.2	0.8
39	74FSB	3203651-2	47	1538.1	0	0.0	1	15.0	2.0	46	22.2	46.3
39	74FSC	3203652-1	44	1642.9	0	0.0	0	0.0	0.0	44	43.6	43.3
39	74FSD	3203653-8	112	645.4	0	0.0	0	0.0	0.0	112	55.8	130.1
39	74FSE	3203654-5	97	745.2	0	0.0	0	0.0	0.0	97	38.9	97.6
39	74FSF	3203655-30	99	730.2	0	0.0	0	0.0	0.0	99	72.2	92.9
39	74FSG	3203656-4	146	495.1	0	0.0	0	0.0	0.0	146	54.8	156.0
41	74FFY	3261100-2	5	14457.8	0	0.0	0	0.0	0.0	5	32.4	2.8
41	74FFX	3261101-20	2	36144.5	0	0.0	0	0.0	0.0	2	62.0	0.5
41	74FFW	3261102-4	3	24096.3	0	0.0	0	0.0	0.0	3	11.2	1.4
41	74FFV	3261103-21	2	36144.5	0	0.0	0	0.0	0.0	2	573.0	2.0
41	74FFT	3261105-1	4	18072.2	0	0.0	0	0.0	0.0	4	31.2	3.5
41	74FFS	3261106-20	7	10327.0	0	0.0	0	0.0	0.0	7	19.7	3.3
41	74FFR	3261107-10	2	36144.5	0	0.0	0	0.0	0.0	2	2.0	1.0
41	74FFM	3261109	2	36144.5	0	0.0	0	0.0	0.0	2	0.7	1.4
41	74FFP	3261110-10	5	14457.8	0	0.0	0	0.0	0.0	5	231.3	4.8
41	74FFN	3261111	1	72288.9	0	0.0	0	0.0	0.0	1	33.0	1.0
41	74FFL	3261112	2	36144.5	0	0.0	0	0.0	0.0	2	0.7	1.0
41	74FFJ	3261113	2	36144.5	0	0.0	0	0.0	0.0	2	576.5	1.5
41	74FFH	3261115	4	18072.2	0	0.0	0	0.0	0.0	4	289.2	3.2
41	74FFG	3261116-10	6	12048.2	0	0.0	0	0.0	0.0	6	196.5	3.2
41	74FFD	3261117-20	4	18072.2	0	0.0	0	0.0	0.0	4	23.7	1.9
41	74FFF	3261119-12	9	8032.1	0	0.0	0	0.0	0.0	9	246.7	6.5
41	74FFC	3261120-10	7	10327.0	0	0.0	0	0.0	0.0	7	163.2	6.8
41	74FFB	3261121-4	31	2331.9	0	0.0	0	0.0	0.0	31	84.2	23.0
41	74FGF	3261122-10	2	36144.5	0	0.0	0	0.0	0.0	2	30.0	0.8
41	74FGF	3261123-10	7	10327.0	0	0.0	0	0.0	0.0	7	331.6	4.3
41	74FGD	3261124-10	10	7228.9	0	0.0	0	0.0	0.0	10	30.0	7.4
41	74FGB	3261126-10	3	24096.3	0	0.0	0	0.0	0.0	3	7.7	1.8

LRU	WUC	PART NUMBER	NUMBER OF SHOP DEMANDS	MEAN TIME BETWEEN DEMANDS	NUMBER SHOP NO FAULT	MEAN TURN AROUND TIME NO FAULT	NUMBER SHOP REPAIRS	MEAN TURN AROUND TIME (DAYS)	MEAN TIME TO REPAIR (HRS)	NUMBER NRTS	MEAN TURN AROUND TIME (DAYS)	SHOP MAINTENANCE MAN HOURS
41	74FGA	3261127-20	3	24096.3	0	0.0	0	0.0	0.0	3	384.0	2.3
41	74FGK	3261130-20	1	72288.9	0	0.0	0	0.0	0.0	1	40.0	1.0
41	74FF6	3261131-20	6	12048.2	0	0.0	0	0.0	0.0	6	204.4	3.0
41	74FF5	3261132-10	2	36144.5	0	0.0	0	0.0	0.0	2	18.5	2.5
41	74FF4	3261133	2	36144.5	0	0.0	0	0.0	0.0	2	564.5	1.0
41	74FF2	3261135-10	2	36144.5	0	0.0	0	0.0	0.0	2	22.0	1.5
41	74FF1	3261136-10	3	24096.3	0	0.0	0	0.0	0.0	3	10.8	3.3
41	74FGH	3261139-2	16	4518.1	0	0.0	0	0.0	0.0	16	5.9	24.4
41	74FGG	3261140-1	6	12048.2	0	0.0	0	0.0	0.0	6	1.7	5.5
41	74FGJ	3261142-20	8	9036.1	0	0.0	0	0.0	0.0	8	298.9	5.6
41	74FGK	3261143-10	25	2891.6	0	0.0	0	0.0	0.0	25	143.1	18.3
41	74FFY	3261144	3	24096.3	0	0.0	0	0.0	0.0	3	364.2	2.8
41	74FFJ	3261146	14	5163.5	0	0.0	0	0.0	0.0	14	175.6	8.8
41	74FF7	3457107	1	72288.9	0	0.0	1	0.5	2.1	0	0.0	4.2
81	74FR#	3265500-8	1	72288.9	0	0.0	1	11.0	1.0	0	0.0	1.0
81	74FR7	3267033	49	1475.3	0	0.0	0	0.0	0.0	49	62.3	49.3
81	74FQS	3267101-1	1	72288.9	0	0.0	0	0.0	0.0	1	13.0	2.0
81	74FQR	3267102-1	3	24096.3	0	0.0	0	0.0	0.0	3	25.3	5.5
81	74FQQ	3267103	3	24096.3	0	0.0	0	0.0	0.0	3	1.8	4.0
81	74FQN	3267104	2	36144.5	0	0.0	0	0.0	0.0	2	5.0	3.0
81	74FQM	3267105	1	72288.9	0	0.0	0	0.0	0.0	1	11.0	0.5
81	74FQL	3267106	1	72288.9	0	0.0	0	0.0	0.0	1	13.0	2.0
81	74FQP	3267107-11	11	6571.7	0	0.0	0	0.0	0.0	11	10.7	9.5
81	74FQJ	3267109-10	5	14457.8	0	0.0	0	0.0	0.0	5	9.6	7.0
81	74FQX	3267119	12	6024.1	0	0.0	0	0.0	0.0	12	7.5	14.8
81	74FQV	3267121	5	14457.8	0	0.0	0	0.0	0.0	5	4.3	4.6
81	74FQW	3267122-3	8	9036.1	0	0.0	0	0.0	0.0	8	7.7	15.4
81	74FQ6	3267123	3	24096.3	0	0.0	0	0.0	0.0	3	28.0	4.7
81	74FQT	3267124	3	24096.3	0	0.0	0	0.0	0.0	3	392.3	9.5
81	74FQ5	3267125-2	30	2409.6	0	0.0	0	0.0	0.0	30	48.7	34.8
81	74FQ4	3267126-2	35	2065.4	0	0.0	0	0.0	0.0	35	37.0	35.0
81	74FQ7	3267128	14	5163.5	0	0.0	0	0.0	0.0	14	8.9	17.0
81	74FQ8	3267129	12	6024.1	0	0.0	0	0.0	0.0	12	15.4	11.6
81	74FQK	3267130-15	42	1721.2	0	0.0	0	0.0	0.0	42	38.1	32.3
81	74FQ1	3267134-5	4	18072.2	0	0.0	0	0.0	0.0	4	275.7	5.0
81	74FQY	3267135-3	132	547.6	1	1.0	0	0.0	0.0	131	65.4	148.3
81	74FQZ	3267136	59	1225.2	0	0.0	0	0.0	0.0	59	28.6	75.7
81	74FQ1	3267137-2	47	1538.1	1	31.0	0	0.0	0.0	46	80.3	69.3
81	74FRC	3267138	1	72288.9	0	0.0	0	0.0	0.0	1	1.0	0.5
81	74FRG	3267140	1	72288.9	0	0.0	0	0.0	0.0	1	1.0	2.0
81	74FRS	3267367	1	72288.9	0	0.0	1	30.0	0.5	0	0.0	1.0
81	74FQ2	3267720-1	21	3442.3	0	0.0	0	0.0	0.0	21	57.7	20.1
541	74FKA	3269104	2	36144.5	0	0.0	0	0.0	0.0	2	16.0	1.3
610	74FHE	3271840-5	108	669.3	1	2.0	2	7.0	5.0	105	41.2	118.7
610	74FHD	3271870-5	165	438.1	0	0.0	1	1.0	0.2	164	21.4	167.3

01/11/79

LRU	WUC	PART NUMBER	NUMBER OF SHOP DEMANDS	MEAN TIME BETWEEN DEMANDS	NUMBER SHOP NO FAULT	MEAN TURN AROUND TIME NO FAULT	NUMBER SHOP REPAIRS	MEAN TURN AROUND TIME (DAYS)	MEAN TIME TO REPAIR (HRS)	NUMBER NRTS	MEAN TURN AROUND TIME (DAYS)	SHOP MAINTENANCE MAN HOURS
610	74FHC	3271950-15	104	695.1	0	0.0	1	0.5	0.2	103	8.7	85.3
610	74FHB	3271960-20	100	722.9	0	0.0	0	0.0	0.0	100	26.6	97.0
610	74FHF	3387020-2	44	1642.9	0	0.0	0	0.0	0.0	44	10.4	37.4
888	74F99	3173856-100	1	72288.9	0	0.0	1	0.5	3.7	0	0.0	7.3
			3584	20.2	5	11.4	13	386.2	8.7	3566	53.4	3858.2

NRTS RATE (%)--------------------: 99.5

MEAN TIME BETWEEN REPAIR (MTBR)=: 20.2

XNRTS2 = 1.0

AN/AWG-20 ARMAMENT CONTROL SYSTEM

ORGANIZATIONAL LEVEL
MAINTAINABILITY SUMMARY

03/08/79

LOCATION: SUMMARY
FLIGHT HOURS: 58119.0

TIME FRAME: SUM
END OF MONTH AIRCRAFT INVENTORY: 74

SORTIES:43401

LRU	FLIGHT LINE MAINT	MEAN TIME BETWEEN MAINT (FH)	NUMBER CND ACTIONS	CND AS % OF LINE MAINT	MEAN MAINT TIME CND (HRS)	NUMBER CANNIB ACTIONS	CANN AS % OF LINE MAINT	MEAN MAINT TIME CANN (HRS)	NUMBER REPAIR IN PLACE ACTIONS	MEAN MAINT TIME RIPS (HRS)	NUMBER REMOVAL (DEMAND) ACTIONS	MEAN MAINT TIME REMOVL (HRS)	NUMBER OTHER ACTIONS	MEAN MAINT TIME OTHER (HRS)	LINE MAINT MAN HOURS
10	532	109.2	4	0.8	4.6	135	25.4	5.5	38	2.3	224	3.5	296	4.1	2860.9
20	3	19372.9	0	0.0	0.0	1	33.3	1.0	0	0.0	1	6.0	2	2.2	11.5
30	821	70.8	2	0.2	12.9	374	45.6	4.4	10	2.9	365	2.7	412	3.8	4262.4
40	7	8302.7	1	14.3	3.5	0	0.0	0.0	0	0.0	0	0.0	5	3.8	22.3
80	2	29059.4	0	0.0	0.0	1	50.0	1.0	0	0.0	0	0.0	1	4.5	5.5
120	1	58118.4	0	0.0	0.0	0	0.0	0.0	C	0.0	0	0.0	0	0.0	1.0
999	721	80.6	45	6.2	4.5	2	0.3	1.5	14	11.2	7	5.2	704	5.6	4326.0
	2087	27.8	52	2.5	4.8	513	24.6	4.7	62	4.4	597	3.1	1420	4.7	11489.6

CND RATE (% OF SORTIES)--------: 0.1

MEAN TIME BETWEEN DEMANDS------: 97.4

SORTY SUCCESS RATE (%)---------: 99.9

WMNCDP = 45.0

AN/AWG-20 ARMAMENT CONTROL SYSTEM

INTERMEDIATE LEVEL

LRU MAINTAINABILITY SUMMARY

03/08/79

LOCATION: SUMMARY
FLIGHT HOURS: 58119.0

TIME FRAME: SUM
END OF MONTH AIRCRAFT INVENTORY: 74   SORTIES: 43401

LRU	WUC	NUMBER OF SHOP ARRIVALS	MEAN TIME BETWEEN ARRIVALS	NUMBER SHOP NO FAULTS	PERCENT OF NO FAULT ARRIVALS	MEAN TURN AROUND TIME (DAYS)	NUMBER SHOP REPAIRS	MEAN TURN AROUND REPAIR (DAYS)	MEAN TIME TO REPAIR (HRS)	NUMBER NRTS	MEAN TURN AROUND NRTS (DAYS)	SHOP MAINTENANCE MAN HOURS
10	75MA0	261	222.7	79	30.3	33.7	153	148.8	6.4	85	158.3	3077.4
30	75MC0	277	209.8	51	18.4	109.8	235	103.3	8.2	79	149.6	4900.7
40	75MD0	1	58118.9	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0
80	75ML0	1	58118.9	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0
999	75M00	1	58118.9	0	0.0	0.0	1	1059.0	8.0	0	0.0	8.0
		541	107.4	130	24.0	63.5	389	123.7	7.5	164	154.1	7986.1

NRTS RATE (%)------------------: 30.3

MEAN TIME BETWEEN REPAIR (MTBR)=: 149.4

MEAN TURN AROUND TIME (MTAT)====: 108.6

CONFIRMED FAILURES PER FLIGHT===: 0.009

XNRTS2 = 22.0

AN/AWG-20 ARMAMENT CONTROL SYSTEM
INTERMEDIATE LEVEL
SRU MAINTAINABILITY SUMMARY

03/08/79

LOCATION: SUMMARY
FLIGHT HOURS: 58119.0

TIME FRAME: SUM
END OF MONTH AIRCRAFT INVENTORY: 74

SORTIES: 43401

LRU	WUC	PART NUMBER	NUMBER OF SHOP DEMANDS	MEAN TIME BETWEEN DEMANDS	NUMBER SHOP NO FAULT	MEAN TURN AROUND TIME NO FAULT	NUMBER SHOP REPAIRS	MEAN TURN AROUND TIME (DAYS)	MEAN TIME TO REPAIR (HRS)	NUMBER NRTS	MEAN TURN AROUND TIME (DAYS)	SHOP MAINTENANCE MAN HOURS
10	75MAB	NAS674V15	2	29059.5	0	0.0	2	5.5	1.0	0	0.0	2.6
10	75MAC	11078-12	0	0.0	0	0.0	0	0.0	0.0	0	0.0	0.0
10	75MAN	11078-13	1	58118.9	1	0.5	0	0.0	0.0	0	0.0	5.0
10	75MAA	30612-1	4	14529.7	0	0.0	0	0.0	0.0	4	2.9	2.1
10	75MAE	30676-1	4	14529.7	1	1098.0	0	0.0	0.0	3	367.2	2.4
10	75MAD	30688-1	3	19373.0	0	0.0	0	0.0	0.0	3	54.5	4.5
10	75MAA	30688-1	1	58118.9	0	0.0	0	0.0	0.0	1	1.0	0.5
10	75MAD	30688-1	1	58118.9	0	0.0	0	0.0	0.0	1	3.0	1.0
10	75MAC	30834-1	4	14529.7	0	0.0	0	0.0	0.0	4	60.0	4.8
10	75MAF	31144-1	3	19373.0	0	0.0	0	0.0	0.0	3	6.5	2.3
10	75MAG	31222-1	3	19373.0	0	0.0	0	0.0	0.0	3	38.2	1.8
10	75MAB	31256-1	10	5811.9	4	558.0	0	0.0	0.0	6	132.6	9.7
10	75MAF	31258-1	3	19373.0	0	0.0	0	0.0	0.0	3	1.7	1.5
10	75MAG	31260-1	2	29059.5	0	0.0	0	0.0	0.0	2	0.7	1.5
10	75MAD	31310-1	1	58118.9	0	0.0	0	0.0	0.0	1	10.0	0.5
10	75MAG	31376-1	3	19373.0	0	0.0	0	0.0	0.0	3	4.7	2.7
30	75MCD	11077-15	0	0.0	0	0.0	0	0.0	0.0	0	0.0	0.0
30	75MCH	11077-20	0	0.0	0	0.0	0	0.0	0.0	0	0.0	0.0
30	75MCA	11078-10	2	29059.5	2	2.5	0	0.0	0.0	0	0.0	6.3
30	75MCR	30486-1	1	58118.9	0	0.0	0	0.0	0.0	1	60.0	2.0
30	75MCQ	30488-1	1	58118.9	0	0.0	0	0.0	0.0	1	1294.0	0.5
30	75MC7	30568-1	2	29059.5	0	0.0	1	1096.0	0.7	1	2.0	1.6
30	75MCN	30584-1	1	58118.9	0	0.0	1	1090.0	0.8	0	0.0	0.8
30	75MCD	30790-1	2	29059.5	0	0.0	1	20.0	0.5	1	3.0	2.5
30	75MCT	30862-1	4	14529.7	0	0.0	3	37.3	0.7	1	0.5	4.2
30	75MCB	30866-1	2	29059.5	0	0.0	1	1116.0	0.7	1	751.0	5.3
30	75MC2	30928-1	4	14529.7	2	49.0	0	0.0	0.0	2	49.0	2.0
30	75MC3	30930-1	1	58118.9	0	0.0	0	0.0	0.0	1	27.0	0.5
30	75MCE	30966-1	1	58118.9	0	0.0	0	0.0	0.0	1	60.0	2.0
30	75MCZ	30976-1	7	8302.7	0	0.0	1	1150.0	1.0	6	2.2	4.3
30	75MC2	30976-1	1	58118.9	0	0.0	0	0.0	0.0	1	94.0	2.0
30	75MCL	30978-1	1	58118.9	0	0.0	0	0.0	0.0	1	45.0	0.5
30	75MCX	31058-1	1	58118.9	0	0.0	0	0.0	0.0	1	6.0	0.3
30	75MCJ	31062-1	5	11623.8	0	0.0	0	0.0	0.0	5	0.8	4.2
30	75MCM	31068-1	61	952.8	1	49.0	9	159.6	0.6	51	13.0	44.3
30	75MCS	31070-1	15	3874.6	2	46.5	5	240.4	0.6	8	24.7	8.2
30	75MCJ	31070-1	1	58118.9	0	0.0	0	0.0	0.0	1	0.5	1.0
30	75MCG	31072-1	2	29059.5	0	0.0	1	1090.0	0.8	1	60.0	2.8

LRU	WUC	PART NUMBER	NUMBER OF SHOP DEMANDS	MEAN TIME BETWEEN DEMANDS	NUMBER SHOP NO FAULT	MEAN TURN AROUND TIME NO FAULT	NUMBER SHOP REPAIRS	MEAN TURN AROUND TIME (DAYS)	MEAN TIME TO REPAIR (HRS)	NUMBER NRTS	MEAN TURN AROUND TIME (DAYS)	SHOP MAINTENANCE MAN HOURS
30	75MCB	311-801	1	58118.9	0	0.0	0	0.0	0.0	1	8.0	0.5
30	75MC4	31132-1	1	58118.9	0	0.0	0	0.0	0.0	1	60.0	1.8
30	75MCH	311421-1	1	58118.9	0	0.0	0	0.0	0.0	1	31.0	0.5
30	75MCH	31156-1	3	19373.0	2	42.5	0	0.0	0.0	1	43.0	7.8
30	75MCF	31172-1	1	58118.9	0	0.0	0	0.0	0.0	1	60.0	2.0
30	75MCA	31174-1	1	58118.9	0	0.0	1	21.0	0.7	0	0.0	0.8
30	75MC4	31176-1	4	14529.7	1	12.0	2	34.0	1.2	1	1.0	3.5
30	75MCB	31180-1	1	58118.9	0	0.0	1	1194.0	1.0	0	0.0	1.0
30	75MCR	31180-1	1	58118.9	0	0.0	1	36.0	0.7	0	0.0	0.7
30	75MCB	31180-1	7	8302.7	1	62.0	1	28.0	1.2	5	25.7	3.8
30	75MCE	31182-1	4	14529.7	0	0.0	3	423.3	0.9	1	0.5	3.3
30	75MCK	31184-1	16	3632.4	0	0.0	12	650.5	0.6	4	212.7	11.0
30	75MCB	31216-1	1	58118.9	0	0.0	0	0.0	0.0	1	60.0	2.0
30	75MC7	31224-1	2	29059.5	0	0.0	2	561.0	0.8	0	0.0	1.7
30	75MCH	31226-1	5	11623.8	0	0.0	1	97.0	1.3	4	333.7	4.8
30	75MCU	31228-1	4	14529.7	0	0.0	1	102.0	1.1	3	12.7	4.6
30	75MCH	31230-1	21	2767.6	10	557.7	2	1083.5	0.7	9	250.2	14.5
30	75MCU	31232-1	1	58118.9	0	0.0	0	0.0	0.0	1	45.0	0.5
30	75MCF	31264-1	2	29059.5	0	0.0	2	103.5	1.3	0	0.0	2.7
30	75MC3	31266-1	1	58118.9	0	0.0	1	62.0	0.7	0	0.0	C.7
30	75MCH	31266-1	1	58118.9	0	0.0	0	0.0	0.0	1	29.0	0.5
30	75MC3	31266-1	2	29059.5	0	0.0	0	0.0	0.0	2	0.2	0.5
30	75MCM	31268-1	1	58118.9	0	0.0	1	110.0	0.7	0	0.0	0.7
30	75MC4	31270-1	6	9686.5	2	602.5	0	0.0	0.0	4	196.2	3.2
30	75MCL	31272-1	7	8302.7	2	572.5	2	576.0	0.5	3	263.0	2.6
30	75MCH	31272-1	1	58118.9	0	0.0	0	0.0	0.0	1	1.0	0.3
30	75MCN	31274-1	2	29059.5	0	0.0	0	0.0	0.0	2	49.5	1.5
30	75MCG	31276-1	2	29059.5	0	0.0	1	83.0	1.1	1	1.0	1.6
30	75MCB	31282-1	1	58118.9	0	0.0	1	33.0	0.7	0	0.0	0.7
30	75MC8	31282-1	3	19373.0	1	60.0	0	0.0	0.0	2	38.5	2.3
30	75MCV	31288-1	1	58118.9	0	0.0	0	0.0	0.0	1	9.0	0.5
30	75MCC	31298-1	11	5283.5	0	0.0	5	377.8	1.1	6	223.3	8.7
30	75MC7	31304-1	2	29059.5	0	0.0	1	79.0	0.7	1	79.0	1.2
30	75MCP	31308-1	10	5811.9	3	405.3	0	0.0	0.0	7	105.6	5.4
30	75MCX	31310-1	5	11623.8	0	0.0	1	97.0	1.2	4	14.6	4.7
30	75MCL	31316-1	3	19373.0	0	0.0	1	96.0	0.7	2	2.5	1.7
30	75MCD	31330-1	1	58118.9	0	0.0	0	0.0	0.0	1	1.0	1.0
30	75MCV	31338-1	6	9686.5	0	0.0	2	576.5	0.8	4	6.7	4.7
30	75MCX	31338-1	1	58118.9	0	0.0	0	0.0	0.0	1	0.5	1.0
30	75MCK	31398-1	11	5283.5	0	0.0	5	227.6	0.7	6	10.8	8.0
30	75MC7	31400-1	8	7264.9	0	0.0	5	914.0	0.8	3	298.7	5.2
30	75MC8	31400-11	1	58118.9	0	0.0	0	0.0	0.0	1	1.0	0.5
30	75MCP	31506-1	2	29059.5	0	0.0	0	0.0	0.0	2	18.0	1.3
30	75MCE	31518-1	1	58118.9	0	0.0	0	0.0	0.0	1	62.0	0.7
30	75MC7	31556-1	8	7264.9	3	63.7	0	0.0	0.0	5	52.8	8.7

03/08/79

LRU	WUC	PART NUMBER	NUMBER OF SHOP DEMANDS	MEAN TIME BETWEEN DEMANDS	NUMBER SHOP NO FAULT	MEAN TURN AROUND TIME NO FAULT	NUMBER SHOP REPAIRS	MEAN TURN AROUND TIME (DAYS)	MEAN TIME TO REPAIR (HRS)	NUMBER NRTS	MEAN TURN AROUND TIME (DAYS)	SHOP MAINTENANCE MAN HOURS
30	175MCF	31696-1	7	8302.7	0	0.0	0	0.0	0.0	7	205.0	8.3
30	175MCW	31700-1	1	58118.9	0	0.0	0	0.0	0.0	1	54.0	1.0
30	175MCC	31734-1	1	58118.9	0	0.0	0	0.0	0.0	1	62.0	0.7
30	175MCA	31744-1	1	58118.9	0	0.0	0	0.0	0.0	1	31.0	1.0
40	175MDD	11077-13	1	58118.9	0	0.0	0	0.0	0.0	1	5.0	0.9
40	175MDF	30870-1	1	58118.9	0	0.0	0	0.0	0.0	1	22.0	2.0
40	175MDE	30982-1	2	29059.5	0	0.0	1	20.0	0.7	1	1191.0	0.7
40	175MDD	30986-1	5	11623.8	0	0.0	2	564.5	1.1	3	6.7	4.7
40	175MDL	31104-1	4	14529.7	0	0.0	0	0.0	0.0	4	12.7	10.0
40	175MDD	31140-1	1	58118.9	0	0.0	1	107.0	0.3	0	0.0	0.3
40	175MDL	31190-1	4	14529.7	0	0.0	3	69.0	0.9	1	1.0	3.8
40	175MDF	31214-1	3	19373.0	0	0.0	3	366.3	1.0	0	0.0	3.0
40	175MDJ	31218-1	1	58118.9	0	0.0	1	1070.0	0.7	0	0.0	0.7
40	175MDC	31220-1	3	19373.0	0	0.0	1	1070.0	1.3	2	16.5	2.8
40	175MDF	31268-1C	1	58118.9	0	0.0	0	0.0	0.0	1	1.0	0.5
40	175MDB	31280-1	4	14529.7	0	0.0	1	28.0	0.7	3	1.8	2.0
40	175MDW	31286-1	2	29059.5	0	0.0	0	0.0	0.0	2	0.7	1.3
40	175MDL	31288-1	17	3418.8	3	57.7	4	950.5	1.0	10	107.9	17.2
40	175MDC	31288-1	1	58118.9	0	0.0	0	0.0	0.0	1	4.0	1.0
40	175MDL	31288-1	2	29059.5	0	0.0	0	0.0	0.0	2	24.0	4.5
40	175MDD	31300-1	6	9686.5	0	0.0	1	1215.0	1.2	5	12.8	14.4
40	175MDF	3130302-1	19	3058.9	2	61.0	9	47.2	0.7	8	45.1	11.4
40	175MDJ	31328-1	11	5283.5	1	64.0	2	67.5	0.6	8	19.0	5.3
40	175MDV	31344-1	1	58118.9	0	0.0	1	187.0	1.4	0	0.0	1.4
40	175MDC	31396-1	3	19373.0	0	0.0	0	0.0	0.0	3	42.3	1.5
40	175MDL	31670-1	19	3058.9	3	73.3	4	843.2	0.6	12	226.0	11.3
40	175MDJ	31694-1	1	58118.9	0	0.0	0	0.0	0.0	1	12.0	1.0
40	175MDL	31767-1	3	19373.0	1	128.0	0	0.0	0.0	2	626.5	3.7
40	175MDK	81841-1	2	29059.5	0	0.0	0	0.0	0.0	2	23.2	1.0
999	175MXX	31310-1	1	58118.9	0	0.0	0	0.0	0.0	1	21.0	0.8
			463	125.5	48	288.2	114	424.1	0.9	301	82.8	390.7

NRTS RATE (%)------------------: 65.0

MEAN TIME BETWEEN REPAIR (MTBR)=: 140.0

XNRTS2 = 0.0

AN/ARC-109 RADIO SET
ORGANIZATIONAL LEVEL
MAINTAINABILITY SUMMARY

03/09/79

LOCATION: SUMMARY
FLIGHT HOURS: 44846.0

TIME FRAME: SUM
END OF MONTH AIRCRAFT INVENTORY: 27

SORTIES: 9465

LRU	FLIGHT LINE MAINT	MEAN TIME BETWEEN MAINT (FH)	NUMBER CND ACTIONS	CND AS % OF LINE MAINT	MEAN MAINT TIME CND (HRS)	NUMBER CANNIB ACTIONS	CANN AS % OF LINE MAINT	MEAN MAINT TIME CANN (HRS)	NUMBER REPAIR IN PLACE ACTIONS	MEAN MAINT TIME RIPS (HRS)	NUMBER REMOVAL (DEMAND) ACTIONS	MEAN MAINT TIME REMOVL (HRS)	NUMBER OTHER ACTIONS	MEAN MAINT TIME OTHER (HRS)	LINE MAINT MAN HOURS
10	1022	43.9	19	1.9	2.0	50	4.9	3.6	381	2.1	520	2.2	379	2.4	3055.1
20	11	4076.9	1	9.1	0.4	0	0.0	0.0	3	1.7	7	4.5	2	3.5	44.4
30	652	68.8	5	0.8	1.8	8	1.2	2.3	476	2.2	157	3.0	90	2.9	1787.4
40	1	44845.6	0	0.0	0.0	0	0.0	0.0	0	0.0	0	0.0	0	0.0	2.9
999	631	71.1	166	26.3	2.2	0	0.0	0.0	34	1.6	13	2.5	403	2.5	1628.8
	2317	19.4	191	8.2	2.2	58	2.5	3.4	894	2.1	697	2.4	934	2.5	6518.7

CND RATE (% OF SORTIES)---------: 2.0

MEAN TIME BETWEEN DEMANDS-------: 64.3

SORTY SUCCESS RATE (%)----------: 82.2

WHNCDP = 1681.0

AN/ARC-109 RADIO SET

INTERMEDIATE LEVEL
LRU MAINTAINABILITY SUMMARY

03/09/79

LOCATION: SUMMARY
FLIGHT HOURS: 44846.0

TIME FRAME: SUM
END OF MONTH AIRCRAFT INVENTORY: 27

SORTIES: 9465

LRU	WUC	NUMBER OF SHOP ARRIVALS	MEAN TIME BETWEEN ARRIVALS	NUMBER SHOP NO FAULTS	PERCENT OF NO FAULT ARRIVALS	MEAN TURN AROUND TIME (DAYS)	NUMBER SHOP REPAIRS	MEAN TURN AROUND REPAIR (DAYS)	MEAN TIME TO REPAIR (HRS)	NUMBER NRTS	MEAN TURN AROUND NRTS (DAYS)	SHOP MAINTENANCE MAN HOURS
10	163AA00	442	101.5	7	1.6	1.1	390	16.0	7.0	51	169.5	4946.4
20	163AB00	6	7474.3	0	0.0	0.0	6	222.2	7.0	1	0.5	84.5
999	163A000	2	22423.0	0	0.0	0.0	1	9.0	8.5	0	0.0	13.0
		450	99.7	7	1.6	1.1	397	19.1	7.1	52	166.2	5043.9

NRTS RATE (%)------------------: 11.6

MEAN TIME BETWEEN REPAIR (MTBR)-: 101.2

MEAN TURN AROUND TIME (MTAT)----: 18.8

CONFIRMED FAILURES PER FLIGHT---: 0.047

XNRTS2 = 0.0

AN/ARC-109 RADIO SET
INTERMEDIATE LEVEL
SRU MAINTAINABILITY SUMMARY

03/09/79

LOCATION: SUMMARY
FLIGHT HOURS: 44846.0

TIME FRAME: SUM
END OF MONTH AIRCRAFT INVENTORY: 27 SORTIES: 9465

LRU	WUC	PART NUMBER	NUMBER OF SHOP DEMANDS	MEAN TIME BETWEEN DEMANDS	NUMBER SHOP NO FAULT	MEAN TURN AROUND TIME NO FAULT	NUMBER SHOP REPAIRS	MEAN TURN AROUND TIME (DAYS)	MEAN TIME TO REPAIR (HRS)	NUMBER NRTS	MEAN TURN AROUND TIME (DAYS)	SHOP MAINTENANCE MAN HOURS
10	63AAF	333592-1	1	44846.0	1	10.0	0	0.0	0.0	0	0.0	9.0
10	63AAD	4K90008-1018	1	44846.0	0	0.0	1	2.0	2.0	0	0.0	4.0
10	63AA9	4K90008-1018	0	0.0	0	0.0	0	0.0	0.0	0	0.0	0.0
10	63AAB	52-80629-001	0	0.0	0	0.0	0	0.0	0.0	0	0.0	0.0
10	63AAD	522-4906-001	1	44846.0	0	0.0	0	0.0	0.0	1	1.0	1.0
10	63AA9	528R0629R001	1	44846.0	0	0.0	0	0.0	0.0	1	59.0	1.0
10	63AAE	528R0632R001	1	44846.0	0	0.0	0	0.0	0.0	1	10.0	2.2
10	63AAG	528R0634R001	1	44846.0	0	0.0	0	0.0	0.0	1	3.0	2.0
10	63AAE	528R0676R001	1	44846.0	0	0.0	0	0.0	0.0	1	4.0	2.0
10	63AAR	528-0229-001	1	44846.0	0	0.0	1	63.0	5.7	0	0.0	7.2
10	63AAH	528-0625-001	0	0.0	0	0.0	0	0.0	0.0	0	0.0	0.0
10	63AAA	528-0628-001	3	14948.7	0	0.0	3	254.0	8.2	0	0.0	33.0
10	63AAE	528-0628-001	1	44846.0	0	0.0	0	0.0	0.0	1	1.0	1.0
10	63AAA	528-0628-001	6	7474.3	0	0.0	4	22.7	4.4	2	43.0	26.2
10	63AAB	528-0629-001	14	3203.3	0	0.0	13	25.9	5.3	1	105.0	120.6
10	63AAE	528-0629-001	1	44846.0	0	0.0	0	0.0	0.0	1	72.0	1.5
10	63AAB	528-0629001	26	1724.8	0	0.0	21	44.2	8.7	5	99.6	307.9
10	63AAC	528-0630-001	22	2038.5	0	0.0	22	13.0	5.7	0	0.0	187.2
10	63AAB	528-0630-001	1	44846.0	0	0.0	1	10.0	9.0	0	0.0	18.0
10	63AAD	528-0631-001	1	44846.0	0	0.0	1	24.0	3.5	0	0.0	7.0
10	63AAE	528-0632-001	1	44846.0	0	0.0	0	0.0	0.0	1	99.0	2.0
10	63AAF	528-0633-001	1	44846.0	0	0.0	1	26.0	6.7	0	0.0	10.3
10	63AAG	528-0634-001	9	4982.9	0	0.0	1	17.0	6.9	8	9.0	22.7
10	63AAH	528-0635-001	6	7474.3	0	0.0	6	9.7	6.7	0	0.0	60.8
10	63AAJ	528-0635-001	1	44846.0	0	0.0	0	0.0	0.0	1	1.0	0.5
10	63AAH	528-0635-001	3	14948.7	0	0.0	3	38.3	10.4	0	0.0	55.3
10	63AAJ	528-0636-001	12	3737.2	1	29.0	0	0.0	0.0	11	7.6	10.3
10	63AAH	528-0636-001	0	0.0	0	0.0	0	0.0	0.0	0	0.0	0.0
10	63AAJ	528-0636-001	41	1093.8	0	0.0	1	19.0	4.0	40	21.2	59.8
10	63AAK	528-0637-001	1	44846.0	0	0.0	1	28.0	6.0	0	0.0	6.0
10	63AAA	528-0638-001	1	44846.0	0	0.0	1	15.0	4.0	0	0.0	8.0
10	63AAC	528-0676-001	2	22423.0	0	0.0	0	0.0	0.0	2	0.5	1.0
10	63AAE	528-0676-001	12	3737.2	0	0.0	0	0.0	0.0	12	2.5	14.2
10	63AAH	528-0676-001	0	0.0	0	0.0	0	0.0	0.0	0	0.0	0.0
10	63AAE	528-0676-01	1	44846.0	0	0.0	0	0.0	0.0	1	2.0	3.5
10	63AAB	528-06929-001	0	0.0	0	0.0	0	0.0	0.0	0	0.0	0.0
10	63AAD	528-0696-001	3	14948.7	0	0.0	3	6.7	9.0	0	0.0	61.4
10	63AAF	528-0710-001	5	8969.2	0	0.0	1	14.0	7.0	4	4.9	11.2

03/09/79

LRU	WUC	PART NUMBER	NUMBER OF SHOP DEMANDS	MEAN TIME BETWEEN DEMANDS	NUMBER SHOP NO FAULT	MEAN TURN AROUND TIME NO FAULT	NUMBER SHOP REPAIRS	MEAN TURN AROUND TIME (DAYS)	MEAN TIME TO REPAIR (HRS)	NUMBER NRTS	MEAN TURN AROUND TIME (DAYS)	SHOP MAINTENANCE MAN HOURS
10	63AAA	528-0710-001	1	44846.0	0	0.0	0	0.0	0.0	1	15.0	0.5
10	63AAB	528-629-001	0	0.0	0	0.0	0	0.0	0.0	0	0.0	0.0
10	63AAG	528-634-001	1	44846.0	0	0.0	0	0.0	0.0	1	1.0	1.3
10	63AAJ	528-636-001	2	22423.0	0	0.0	0	0.0	0.0	2	77.7	2.5
10	63AAB	5280629001	6	7474.3	0	0.0	5	30.0	6.0	1	1128.0	61.1
10	63AAC	5280630001	0	0.0	0	0.0	0	0.0	0.0	0	0.0	0.0
10	63AAE	5280632001	1	44846.0	0	0.0	0	0.0	0.0	1	10.0	2.2
10	63AAG	5280634001	1	44846.0	0	0.0	0	0.0	0.0	1	3.0	2.0
10	63AAH	5280635001	2	22423.0	0	0.0	2	32.0	5.2	0	0.0	21.0
10	63AAJ	5280636001	1	44846.0	0	0.0	0	0.0	0.0	1	14.0	3.0
10	63AAH	5280636001	1	44846.0	0	0.0	1	13.0	3.9	0	0.0	7.1
10	63AAJ	5280636001	4	11211.5	0	0.0	2	2.0	0.8	2	8.0	4.0
10	63AAE	5280676001	3	14948.7	0	0.0	0	0.0	0.0	3	455.3	4.8
10	63AAF	528710001	2	22423.0	0	0.0	0	0.0	0.0	2	0.5	3.0
10	63AAB	58-0629-001	1	44846.0	0	0.0	1	8.0	2.0	0	0.0	4.0
10	63AAC	582-0630-001	1	44846.0	0	0.0	1	6.0	2.5	0	0.0	5.0
10	63AAE	5820676001	1	44846.0	0	0.0	0	0.0	0.0	1	16.0	1.8
10	63AAM	622-0828-001	0	0.0	0	0.0	0	0.0	0.0	0	0.0	0.0
10	63AAB	622-0828-001	1	44846.0	0	0.0	1	0.5	2.5	0	0.0	5.0
10	63AAM	622-0828-001	6	7474.3	0	0.0	4	8.7	4.8	2	31.5	34.7
10	63AAB	622-0828-001	1	44846.0	0	0.0	0	0.0	0.0	1	17.0	2.0
10	63AAM	6622-0828-001	10	4484.6	1	1.0	6	10.7	7.6	3	43.0	97.8
10	63AAD	714579-802	1	44846.0	0	0.0	1	3.0	2.5	0	0.0	5.0
10	63AAU	777815758001	1	44846.0	0	0.0	0	0.0	0.0	1	37.0	2.0
10	63AAD	777-1575-001	2	22423.0	0	0.0	1	9.5	5.7	1	0.5	12.1
10	63AAB	777-1575-001	2	22423.0	0	0.0	2	37.0	3.5	0	0.0	8.0
10	63AAC	7771575001	0	0.0	0	0.0	0	0.0	0.0	0	0.0	0.0
10	63AAE	828-676-001	1	44846.0	0	0.0	0	0.0	0.0	1	0.5	2.7
10	63AAM	960P11	2	22423.0	0	0.0	1	2.0	3.0	1	52.0	6.5
20	63ABB	528-0629-001	0	0.0	0	0.0	0	0.0	0.0	0	0.0	0.0
20	63ABG	714578-802	0	0.0	0	0.0	0	0.0	0.0	0	0.0	0.0
20	63ABE	714579-802	0	0.0	0	0.0	0	0.0	0.0	0	0.0	0.0
20	63ABD	714580-802	0	0.0	0	0.0	0	0.0	0.0	0	0.0	0.0
20	63ABS	714582-802	1	44846.0	0	0.0	1	17.0	2.5	0	0.0	5.0
20	63ABK	714582-802	0	0.0	0	0.0	0	0.0	0.0	0	0.0	0.0
30	63ACG	1RU14147	1	44846.0	0	0.0	1	6.0	3.0	0	0.0	6.0
30	63ACJ	357560	0	0.0	0	0.0	0	0.0	0.0	0	0.0	0.0
30	63ACF	4K90007101A	45	996.6	0	0.0	45	2.9	4.5	0	0.0	362.1
30	63ACG	4K90008-101B	1	44846.0	0	0.0	1	1.0	3.6	0	0.0	7.2
30	63ACH	4K90029-101A	1	44846.0	0	0.0	1	1.0	0.5	0	0.0	1.0
30	63ACF	777-1575-001	9	4982.9	0	0.0	8	138.7	3.8	1	105.0	47.8
60	63AHB	528-0629-001	1	44846.0	0	0.0	1	1.0	4.0	0	0.0	4.0
60	63AHC	528-0630-001	0	0.0	0	0.0	0	0.0	0.0	0	0.0	0.0
999	63AEF	11-21106	1	44846.0	0	0.0	0	0.0	0.0	1	5.0	2.0
999	63AED	205404-001	2	22423.0	0	0.0	2	3.7	3.0	0	0.0	8.8
			299	150.0	3	13.3	173	35.3	5.9	123	41.7	1800.6

NRTS RATE (%)-------------------: 41.1

MEAN TIME BETWEEN REPAIR (MTBR)-: 151.5

MARK V NAVIGATION SET
ORGANIZATIONAL LEVEL
MAINTAINABILITY SUMMARY

03/09/79

LOCATION: SUMMARY
FLIGHT HOURS: 44846.0

TIME FRAME: SUM
END OF MONTH AIRCRAFT INVENTORY: 27

SORTIES: 9465

LRU	FLIGHT LINE MAINT	MEAN TIME BETWEEN MAINT (FH)	NUMBER CND ACTIONS	CND AS % OF LINE MAINT	MEAN MAINT TIME CND (HRS)	NUMBER CANNIB ACTIONS	CANN AS % OF LINE MAINT	MEAN MAINT TIME CANN (HRS)	NUMBER REPAIR IN PLACE ACTIONS	MEAN MAINT TIME RIPS (HRS)	NUMBER REMOVAL (DEMAND) ACTIONS	MEAN MAINT TIME REMOVL (HRS)	NUMBER OTHER ACTIONS	MEAN MAINT TIME OTHER (HRS)	LINE MAINT MAN HOURS
10	1177	38.1	22	1.9	1.6	51	4.3	2.5	311	2.0	785	2.0	593	2.0	3530.4
20	1	44845.6	0	0.0	0.0	0	0.0	0.0	0	0.0	0	0.0	1	2.2	2.2
30	360	124.6	1	0.3	1.2	6	1.7	2.1	206	2.6	146	1.8	117	2.1	1062.2
40	2	22422.9	0	0.0	0.0	0	0.0	0.0	0	0.0	0	0.0	2	2.0	4.1
999	501	89.5	158	31.5	1.9	2	0.4	0.4	11	2.8	5	2.1	357	2.6	1254.7
	2041	22.0	181	8.9	1.8	59	2.9	2.4	528	2.3	936	1.9	1070	2.2	5853.6

CND RATE (% OF SORTIES)--------: 1.9

MEAN TIME BETWEEN DEMANDS------: 47.9

SORTY SUCCESS RATE (%)---------: 75.8

WHNCOP = 2286.0

MARK V NAVIGATION SET
INTERMEDIATE LEVEL
LRU MAINTAINABILITY SUMMARY

03/09/79

LOCATION: SUMMARY
TIME FRAME: SUM
FLIGHT HOURS: 44846.0
END OF MONTH AIRCRAFT INVENTORY: 27
SORTIES: 9465

LRU	WUC	NUMBER OF SHOP ARRIVALS	MEAN TIME BETWEEN ARRIVALS	NUMBER SHOP NO FAULTS	PERCENT OF NO FAULT ARRIVALS	MEAN TURN AROUND TIME (DAYS)	NUMBER SHOP REPAIRS	MEAN TURN AROUND REPAIR (DAYS)	MEAN TIME TO REPAIR (HRS)	NUMBER NRTS	MEAN TURN AROUND NRTS (DAYS)	SHOP MAINTENANCE MAN HOURS
10	71LA0	643	69.7	56	8.7	4.9	507	11.1	5.8	146	15.4	5326.3
		643	69.7	56	8.7	4.9	507	11.1	5.8	146	15.4	5326.3

NRTS RATE (%)------------------: 22.7

MEAN TIME BETWEEN REPAIR (MTBR)-: 76.4

MEAN TURN AROUND TIME (MTAT)----: 10.5

CONFIRMED FAILURES PER FLIGHT---: 0.062

XNRTS2 = 0.0

MARK V NAVIGATION SET

INTERMEDIATE LEVEL

SRU MAINTAINABILITY SUMMARY

03/09/79

LOCATION: SUMMARY
FLIGHT HOURS: 44846.0

TIME FRAME: SUM
END OF MONTH AIRCRAFT INVENTORY: 27

SORTIES: 9465

LRU	WUC	PART NUMBER	NUMBER OF SHOP DEMANDS	MEAN TIME BETWEEN DEMANDS	NUMBER SHOP NO FAULT	MEAN TURN AROUND TIME NO FAULT	NUMBER SHOP REPAIRS	MEAN TURN AROUND TIME (DAYS)	MEAN TIME TO REPAIR (HRS)	NUMBER NRTS	MEAN TURN AROUND TIME (DAYS)	SHOP MAINTENANCE MAN HOURS
10	171LAH	3020000356-2	1	44846.0	0	0.0	0	0.0	0.0	1	1.0	0.5
10	171LAE	4K11003	1	44846.0	0	0.0	1	1.0	2.0	0	0.0	2.0
10	171LA9	4K12000-101A	1	44846.0	0	0.0	1	3.0	7.9	0	0.0	7.9
10	171LAA	4K90016-101B	1	44846.0	0	0.0	1	2.0	0.2	0	0.0	0.3
10	171LAH	4K90016-101B	1	44846.0	0	0.0	0	0.0	0.0	1	0.5	0.6
10	171LAC	4K90031-101A	1	44846.0	0	0.0	1	1.0	2.5	0	0.0	5.0
10	171LA9	4812000-101A	1	44846.0	0	0.0	1	2.0	1.0	0	0.0	1.0
10	171LAE	80000317-4	1	44846.0	0	0.0	0	0.0	0.0	1	5.0	1.0
10	171LAM	8010000089-1	0	0.0	0	0.0	0	0.0	0.0	0	0.0	0.0
10	171LAD	8010000089-1	1	44846.0	0	0.0	1	2.0	1.7	0	0.0	3.3
10	171LAB	8010000089-1	1	44846.0	0	0.0	0	0.0	0.0	1	5.0	1.0
10	171LAD	8010000089-1	1	44846.0	0	0.0	0	0.0	0.0	1	10.0	0.5
10	171LAM	8010000314-2	1	44846.0	0	0.0	0	0.0	0.0	1	2.0	2.0
10	171LAJ	8010000349-2	1	44846.0	0	0.0	0	0.0	0.0	1	1.0	0.8
10	171LAK	80200000306-6	3	14948.7	0	0.0	0	0.0	0.0	3	1.8	3.5
10	171LAA	80200000309-3	1	44846.0	0	0.0	0	0.0	0.0	1	0.5	0.5
10	171LAK	802000018-3	1	44846.0	0	0.0	0	0.0	0.0	1	4.0	2.7
10	171LAF	802000030616	1	44846.0	0	0.0	0	0.0	0.0	1	12.0	0.5
10	171LAK	8020000306-6	10	4484.6	0	0.0	0	0.0	0.0	10	5.7	10.4
10	171LAF	8020000306-6	1	44846.0	0	0.0	0	0.0	0.0	1	8.0	8.0
10	171LAK	8020000306-6	14	3203.3	0	0.0	0	0.0	0.0	14	79.8	10.9
10	171LAF	8020000306-6	1	44846.0	0	0.0	0	0.0	0.0	1	3.0	0.5
10	171LAJ	8020000306-6	1	44846.0	0	0.0	0	0.0	0.0	1	2.0	2.0
10	171LAK	8020000306-6	6	7474.3	0	0.0	0	0.0	0.0	6	3.0	3.5
10	171LAF	8020000306-6	1	44846.0	0	0.0	0	0.0	0.0	1	0.5	1.0
10	171LAK	8020000306-6	16	2802.9	0	0.0	0	0.0	0.0	16	4.9	13.3
10	171LAG	8020000308	5	8969.2	0	0.0	0	0.0	0.0	5	2.3	8.3
10	171LAA	802000030982	9	4982.9	0	0.0	0	0.0	0.0	9	63.6	18.0
10	171LAM	802000030982	3	14948.7	0	0.0	0	0.0	0.0	3	36.7	1.5
10	171LAA	802000030982	1	44846.0	0	0.0	0	0.0	0.0	1	0.5	1.0
10	171LAD	802000030982	1	44846.0	0	0.0	0	0.0	0.0	1	118.0	1.0
10	171LAA	802000030983	3	14948.7	0	0.0	0	0.0	0.0	3	1.2	3.0
10	171LAK	802000030983	1	44846.0	0	0.0	0	0.0	0.0	1	0.5	2.0
10	171LAA	802000030985	1	44846.0	0	0.0	0	0.0	0.0	1	4.0	0.5
10	171LAM	8020000309-1	1	44846.0	0	0.0	0	0.0	0.0	1	10.0	0.5
10	171LAA	80200003093	125	358.8	0	0.0	1	0.5	1.0	124	10.5	125.7
10	171LAM	802000031-2	1	44846.0	0	0.0	0	0.0	0.0	1	4.0	1.0
10	171LAL	8020000312-2	27	1661.0	0	0.0	0	0.0	0.0	27	101.0	39.7

03/09/79

LRU	WUC	PART NUMBER	NUMBER OF SHOP DEMANDS	MEAN TIME BETWEEN DEMANDS	NUMBER SHOP NO FAULT	MEAN TURN AROUND TIME NO FAULT	NUMBER SHOP REPAIRS	MEAN TURN AROUND TIME (DAYS)	MEAN TIME TO REPAIR (HRS)	NUMBER NRTS	MEAN TURN AROUND TIME (DAYS)	SHOP MAINTENANCE MAN HOURS
10	171LAD	8020000312-2	1	44846.0	0	0.0	0	0.0	0.0	1	3.0	1.0
10	171LAL	8020000312-2	18	2491.4	0	0.0	0	0.0	0.0	18	6.4	24.0
10	171LAC	8020000312-2	1	44846.0	0	0.0	0	0.0	0.0	1	1.0	0.5
10	171LAL	8020000312-5	12	3737.2	0	0.0	1	25.0	9.0	11	4.3	20.1
10	171LAB	8020000313-3	36	1245.7	0	0.0	0	0.0	0.0	36	34.7	33.5
10	171LAA	8020000313-3	1	44846.0	0	0.0	0	0.0	0.0	1	2.0	2.0
10	171LAB	8020000313-3	18	2491.4	0	0.0	0	0.0	0.0	18	2.3	27.0
10	171LAM	8020000314-2	8	5605.7	0	0.0	0	0.0	0.0	8	14.6	8.5
10	171LAH	8020000314-2	1	44846.0	0	0.0	0	0.0	0.0	1	10.0	1.8
10	171LAM	8020000314-2	27	1661.0	0	0.0	0	0.0	0.0	27	2.9	30.8
10	171LAB	8020000314-2	1	44846.0	0	0.0	0	0.0	0.0	1	1.0	0.5
10	171LAM	8020000314-8	54	830.5	0	0.0	0	0.0	0.0	54	4.1	55.6
10	171LAC	8020000315-3	40	1121.1	0	0.0	0	0.0	0.0	40	36.2	33.0
10	171LAD	8020000316-6	28	1601.6	0	0.0	0	0.0	0.0	28	48.6	20.8
10	171LAE	8020000317-4	17	2638.0	0	0.0	0	0.0	0.0	17	69.7	20.0
10	171LAJ	8020000317-4	1	44846.0	0	0.0	0	0.0	0.0	1	3.0	2.0
10	171LAE	8020000317-4	14	3203.3	0	0.0	0	0.0	0.0	14	1.9	12.8
10	171LAJ	8020000317-4	1	44846.0	0	0.0	0	0.0	0.0	1	0.5	2.0
10	171LAE	8020000317-4	11	4076.9	0	0.0	0	0.0	0.0	11	3.5	12.8
10	171LAF	8020000318-3	30	1494.9	0	0.0	0	0.0	0.0	30	38.0	33.6
10	171LAN	8020000347-1	4	11211.5	0	0.0	0	0.0	0.0	4	1.0	3.0
10	171LAM	8020000347-1	1	44846.0	0	0.0	0	0.0	0.0	1	3.0	1.0
10	171LAN	8020000347-1	23	1949.8	0	0.0	0	0.0	0.0	23	45.8	24.5
10	171LAJ	8020000349-2	20	2242.3	1	1.0	0	0.0	0.0	19	110.1	21.2
10	171LAG	8020000349-2	1	44846.0	0	0.0	0	0.0	0.0	1	8.0	0.5
10	171LAJ	8020000349-2	12	3737.2	0	0.0	0	0.0	0.0	12	2.9	10.5
10	171LAH	8020000356-2	14	3203.3	0	0.0	0	0.0	0.0	14	1.2	16.2
10	171LAN	8020000356-2	1	44846.0	0	0.0	0	0.0	0.0	1	0.5	0.5
10	171LAH	8020000356-2	16	2802.9	0	0.0	0	0.0	0.0	16	127.8	20.3
10	171LAL	8020000356-2	1	44846.0	0	0.0	0	0.0	0.0	1	1.0	2.0
10	171LAH	80200003562	27	1661.0	0	0.0	0	0.0	0.0	27	3.1	35.6
10	171LAD	802000036-13	1	44846.0	0	0.0	0	0.0	0.0	1	4.0	1.0
10	171LAJ	8020000369-2	1	44846.0	0	0.0	0	0.0	0.0	1	0.5	2.0
10	171LAN	802000039882	1	44846.0	0	0.0	0	0.0	0.0	1	88.0	2.0
10	171LAF	802000306-6	1	44846.0	0	0.0	0	0.0	0.0	1	12.0	0.5
10	171LAK	802000306-6	2	22423.0	0	0.0	0	0.0	0.0	2	4.7	1.0
10	171LAA	802000309-3	3	14948.7	0	0.0	0	0.0	0.0	3	5.7	3.5
10	171LAB	802000313-3	2	22423.0	0	0.0	0	0.0	0.0	2	14.0	1.0
10	171LAM	802000314-2	1	44846.0	0	0.0	0	0.0	0.0	1	1.0	0.5
10	171LAC	802000315-3	1	44846.0	0	0.0	0	0.0	0.0	1	1.0	0.5
10	171LAD	802000316-3	1	44846.0	0	0.0	0	0.0	0.0	1	4.0	1.0
10	171LAF	802000318-3	1	44846.0	0	0.0	0	0.0	0.0	1	2.0	0.9
10	171LAJ	802000349-2	1	44846.0	0	0.0	0	0.0	0.0	1	4.0	1.0
10	171LAL	8030000312-3	1	44846.0	0	0.0	0	0.0	0.0	1	2.0	1.0
10	171LAH	862000356-2	1	44846.0	0	0.0	0	0.0	0.0	1	3.0	0.3

03/09/79

LRU	WUC	PART NUMBER	NUMBER OF SHOP DEMANDS	MEAN TIME BETWEEN DEMANDS	NUMBER SHOP NO FAULT	MEAN TURN AROUND TIME NO FAULT	NUMBER SHOP REPAIRS	MEAN TURN AROUND TIME (DAYS)	MEAN TIME TO REPAIR (HRS)	NUMBER NRTS	MEAN TURN AROUND TIME (DAYS)	SHOP MAINTENANCE MAN HOURS
30	171LC	E1PG2130	2	22423.0	0	0.0	2	2.5	2.8	0	0.0	11.3
30	171LC	914K1103-119	4	11211.5	0	0.0	4	1.7	2.6	0	0.0	20.0
30	171LC	C18010000403-1	71	631.6	8	1.2	21	12.2	2.2	42	2.4	132.5
			782	57.3	9	1.2	35	8.7	2.5	738	25.6	942.5

NRTS RATE (%)-------------------: 94.4

MEAN TIME BETWEEN REPAIR (MTBR)-: 58.0

XNRTS2 = 0.0

TARGET IDENTIFICATION SYSTEM ELECTRO-OPTICAL

ORGANIZATIONAL LEVEL
MAINTAINABILITY SUMMARY

03/12/79

LOCATION: SUMMARY
FLIGHT HOURS: 148589.0

TIME FRAME: SUM
END OF MONTH AIRCRAFT INVENTORY: 86   SORTIES:*****

LRU	FLIGHT LINE MAINT	MEAN TIME BETWEEN MAINT (FH)	NUMBER CND ACTIONS	CND AS % OF LINE MAINT	MEAN MAINT TIME CND (HRS)	NUMBER CANNIB ACTIONS	CANN AS % OF LINE MAINT	MEAN MAINT TIME CANN (HRS)	NUMBER REPAIR IN PLACE ACTIONS	MEAN MAINT TIME RIPS (HRS)	NUMBER REMOVAL (DEMAND) ACTIONS	MEAN MAINT TIME REMOVL (HRS)	NUMBER OTHER ACTIONS	MEAN MAINT TIME OTHER (HRS)	LINE MAINT MAN HOURS
10	814	182.5	42	5.2	3.4	17	2.1	8.7	15	5.1	822	3.7	859	3.7	6596.1
20	11	13508.1	0	0.0	0.0	0	0.0	0.0	2	0.2	5	2.3	7	2.8	31.7
30	4	37147.2	0	0.0	0.0	0	0.0	0.0	2	2.0	2	4.5	5	3.7	31.6
40	22	6754.0	5	22.7	3.3	0	0.0	0.0	2	2.2	3	5.8	12	2.7	70.8
50	3	49529.5	0	0.0	0.0	0	0.0	0.0	0	0.0	3	7.0	0	0.0	21.0
60	331	448.9	3	0.9	10.5	5	1.5	5.4	6	6.4	342	3.7	340	4.2	2788.1
70	174	854.0	1	0.6	3.0	2	1.1	6.7	39	3.6	140	3.4	144	3.0	1073.1
80	272	546.3	5	1.8	1.7	2	0.7	8.0	67	2.6	208	2.1	211	2.1	1092.9
100	1	148587.6	1	100.0	10.5	0	0.0	0.0	0	0.0	0	0.0	0	0.0	10.5
999	1795	82.8	656	36.5	5.1	0	0.0	0.0	119	8.1	42	4.6	1530	5.2	12473.9
	3427	43.4	713	20.8	5.0	26	0.8	7.8	252	5.6	1567	3.5	3108	4.4	24189.9

CND RATE (% OF SORTIES)---------: 0.6

MEAN TIME BETWEEN DEMANDS-------: 94.8

SORTY SUCCESS RATE (%)---------: 95.8

WMNCDP = 4639.0

TARGET IDENTIFICATION SYSTEM ELECTRO-OPTICAL

INTERMEDIATE LEVEL

LRU MAINTAINABILITY SUMMARY

03/12/79

LOCATION: SUMMARY
FLIGHT HOURS: 148589.0

TIME FRAME: SUM
END OF MONTH AIRCRAFT INVENTORY: 66

SORTIES: 111565

LRU	WUC	NUMBER OF SHOP ARRIVALS	MEAN TIME BETWEEN ARRIVALS	NUMBER SHOP NO FAULTS	PERCENT OF NO FAULT ARRIVALS	MEAN TURN AROUND TIME (DAYS)	NUMBER SHOP REPAIRS	MEAN TURN AROUND REPAIR (DAYS)	MEAN TIME TO REPAIR (HRS)	NUMBER NRTS	MEAN TURN AROUND NRTS (DAYS)	SHOP MAINTENANCE MAN HOURS
10	171UA0	623	238.5	116	18.6	24.2	589	16.7	6.6	121	34.0	8110.9
20	171UB0	5	29717.8	1	20.0	2.0	4	1.4	2.2	0	0.0	19.6
30	171UC0	1	148588.8	0	0.0	0.0	1	0.5	1.2	0	0.0	3.8
40	171UD0	1	148588.8	0	0.0	0.0	0	0.0	0.0	1	12.0	2.0
60	171UH0	277	536.4	101	36.5	43.2	237	61.3	6.9	26	107.3	3998.9
70	171UK0	84	1768.9	36	42.9	68.7	61	104.4	3.9	6	21.0	660.5
80	171UL0	152	977.6	46	30.3	3.0	122	23.9	2.6	5	10.0	806.1
999	171U00	3	49529.6	1	33.3	0.5	1	2.0	2.5	1	0.5	10.0
999	171UN0	1	148588.8	0	0.0	0.0	1	15.0	3.0	0	0.0	6.0
		1147	129.5	301	26.2	32.5	1016	33.1	6.0	160	44.4	13657.7

NRTS RATE (%)--------------------: 13.9

MEAN TIME BETWEEN REPAIR (MTBR)-: 175.8

MEAN TURN AROUND TIME (MTAT)----: 33.0

CONFIRMED FAILURES PER FLIGHT---: 0.008

XNRTS2 = 1.0

TARGET IDENTIFICATION SYSTEM ELECTRO-OPTICAL
INTERMEDIATE LEVEL
SRU MAINTAINABILITY SUMMARY

03/12/79

LOCATION: SUMMARY
FLIGHT HOURS: 148589.0

TIME FRAME: SUM
END OF MONTH AIRCRAFT INVENTORY: 86 SORTIES: 111585

LRU	WUC	PART NUMBER	NUMBER OF SHOP DEMANDS	MEAN TIME BETWEEN DEMANDS	NUMBER SHOP NO FAULT	MEAN TURN AROUND TIME NO FAULT	NUMBER SHOP REPAIRS	MEAN TURN AROUND TIME (DAYS)	MEAN TIME TO REPAIR (HRS)	NUMBER NRTS	MEAN TURN AROUND TIME (DAYS)	SHOP MAINTENANCE MAN HOURS
10	71UAD	301115	0	0.0	0	0.0	0	0.0	0.0	0	0.0	0.0
10	71UAF	301115	0	0.0	0	0.0	0	0.0	0.0	0	0.0	0.0
10	71UAD	919922801	1	148588.8	0	0.0	0	0.0	0.0	1	6.0	0.4
50	71UFA	301115	1	148588.8	0	0.0	1	1.0	1.0	0	0.0	2.0
50	71UFH	301425	14	10613.5	0	0.0	6	52.7	0.8	8	17.9	15.8
50	71UFK	301430	19	7820.5	1	1.0	14	21.1	1.0	4	0.9	26.9
50	71UFG	301445	11	13508.1	0	0.0	9	43.6	1.1	2	5.7	12.8
50	71UFB	301450A	7	21227.0	1	6.0	4	80.5	1.1	2	21.0	20.3
50	71UFE	301465	4	37147.2	0	0.0	0	0.0	0.0	4	2.9	5.7
50	71UFC	301475	4	37147.2	0	0.0	3	113.0	0.6	1	6.0	3.8
50	71UFG	301475	1	148588.8	1	1.0	0	0.0	0.0	0	0.0	1.0
50	71UFC	301475	4	37147.2	1	1.0	2	99.5	0.6	1	0.5	7.2
50	71UFN	301495A	25	5943.6	1	1.0	15	24.1	1.3	9	12.2	33.0
50	71UFD	301505	8	18573.6	1	1.0	4	79.0	2.2	3	0.7	25.0
50	71UFA	301520	9	16509.9	0	0.0	4	87.5	1.0	5	11.8	12.6
50	71UFE	301615	1	148588.8	1	1.0	0	0.0	0.0	0	0.0	2.0
50	71UFA	302520	1	148588.8	0	0.0	0	0.0	0.0	1	1.0	1.0
50	71UFG	310445	1	148588.8	0	0.0	1	1364.0	3.0	0	0.0	6.0
60	71UHF	301115	0	0.0	0	0.0	0	0.0	0.0	0	0.0	0.0
60	71UHA	301115	1	148588.8	0	0.0	1	0.5	2.7	0	0.0	5.5
60	71UHJ	301470	1	148588.8	0	0.0	0	0.0	0.0	1	11.0	2.0
60	71UHA	301630	6	24764.8	0	0.0	0	0.0	0.0	6	39.2	10.0
60	71UHQ	301635	3	49529.6	0	0.0	0	0.0	0.0	3	49.7	5.0
60	71UHB	301640	2	74294.4	0	0.0	2	46.5	1.0	0	0.0	1.9
60	71UHQ	30165	1	148588.8	0	0.0	0	0.0	0.0	1	28.0	1.0
60	71UHC	301650	9	16509.9	1	14.0	4	58.5	0.9	4	299.5	9.8
60	71UHA	301655	1	148588.8	0	0.0	0	0.0	0.0	1	1351.0	2.5
60	71UHQ	301655	5	29717.8	0	0.0	4	31.2	1.4	1	1.0	5.9
60	71UHA	301655	2	74294.4	0	0.0	2	121.0	1.4	0	0.0	2.8
60	71UHQ	301655	32	4643.4	0	0.0	31	20.9	1.4	1	63.0	45.4
60	71UHA	301655	1	148588.8	0	0.0	0	0.0	0.0	1	39.0	1.0
60	71UHQ	301655	5	29717.8	1	3.0	0	0.0	0.0	4	25.5	6.0
60	71UHA	301655	1	148588.8	0	0.0	0	0.0	0.0	1	67.0	2.0
60	71UHQ	301655	3	49529.6	0	0.0	0	0.0	0.0	3	23.7	4.0
60	71UHL	301660	2	74294.4	0	0.0	2	86.0	0.8	0	0.0	1.5
60	71UHC	301660	1	148588.8	0	0.0	0	0.0	0.0	1	11.0	1.0
60	71UHL	301660	8	18573.6	0	0.0	0	0.0	0.0	8	16.0	9.0
60	71UHA	301665	57	2606.8	0	0.0	48	12.4	1.2	9	24.2	73.8

03/12/79

LRU	NUC	PART NUMBER	NUMBER OF SHOP DEMANDS	MEAN TIME BETWEEN DEMANDS	NUMBER SHOP NO FAULT	MEAN TURN AROUND TIME NO FAULT	NUMBER SHOP REPAIRS	MEAN TURN AROUND TIME (DAYS)	MEAN TIME TO REPAIR (HRS)	NUMBER NRTS	MEAN TURN AROUND TIME (DAYS)	SHOP MAINTENANCE MAN HOURS
60	71UHQ	301665	1	148588.8	0	0.0	0	0.0	0.0	1	11.0	2.5
60	71UHA	301665	10	14858.9	0	0.0	0	0.0	0.0	10	12.0	16.8
60	71UHM	301670	11	13508.1	0	0.0	5	70.2	0.9	6	8.7	13.9
60	71UH7	301670	1	148588.8	0	0.0	0	0.0	0.0	1	7.0	2.0
60	71UHM	301670	6	24764.8	0	0.0	0	0.0	0.0	6	26.7	12.0
60	71UHP	301680	3	49529.6	0	0.0	2	71.5	0.8	1	1020.0	2.7
60	71UHE	301695	5	29717.8	0	0.0	3	98.3	0.9	2	5.5	4.3
60	71UHF	301700	1	148588.8	0	0.0	0	0.0	0.0	1	2.0	1.8
60	71UHD	301715	12	12382.4	0	0.0	9	35.8	1.0	3	352.0	13.1
60	71UHG	301720	1	148588.8	0	0.0	1	76.0	1.4	0	0.0	1.4
60	71UHH	301730	5	29717.8	0	0.0	2	112.5	2.4	3	6.0	13.8
60	71UHJ	301740	4	37147.2	0	0.0	2	113.0	1.0	2	7.0	4.9
60	71UHF	301750	17	8740.5	0	0.0	11	29.3	0.7	6	14.6	18.2
60	71UHN	301765	26	5715.0	0	0.0	19	30.7	1.6	7	30.6	43.3
60	71UH7	301765	1	148588.8	0	0.0	0	0.0	0.0	1	7.0	2.0
60	71UHM	301765	1	148588.8	0	0.0	0	0.0	0.0	1	36.0	2.0
70	71UKA	3018108	11	13508.1	0	0.0	2	148.0	1.1	9	119.4	14.7
100	71UPA	301115	0	0.0	0	0.0	0	0.0	0.0	0	0.0	0.0
999	71U99	73217-10	7	21227.0	0	0.0	3	2.2	2.7	4	9.6	31.4
			375	396.2	9	3.2	216	42.7	1.3	150	53.3	567.1

NRTS RATE (%)------------------------: 40.0

MEAN TIME BETWEEN REPAIR (MTBR)-: 406.0

XNRT32 = 0.0

DIRECT RADAR SCOPE RECORDING SYSTEM

ORGANIZATIONAL LEVEL

MAINTAINABILITY SUMMARY

03/09/79

LOCATION: SUMMARY

FLIGHT HOURS: 148589.0

TIME FRAME: SUM

END OF MONTH AIRCRAFT INVENTORY: 86

SORTIES:*****

LRU	FLIGHT LINE MAINT	MEAN TIME BETWEEN MAINT (FH)	NUMBER CND ACTIONS	CND AS % OF LINE MAINT	MEAN MAINT TIME CND (HRS)	NUMBER CANNIB ACTIONS	CANN AS % OF LINE MAINT	MEAN MAINT TIME CANN (HRS)	NUMBER REPAIR IN PLACE ACTIONS	MEAN MAINT TIME RIPS (HRS)	NUMBER REMOVAL (DEMAND) ACTIONS	MEAN MAINT TIME REMOVL (HRS)	NUMBER OTHER ACTIONS	MEAN MAINT TIME OTHER (HRS)	LINE MAINT MAN HOURS
120	138	1076.7	5	4.3	2.0	1	0.7	1.5	41	2.4	78	1.1	77	1.4	305.7
130	893	166.4	165	18.5	2.3	4	0.4	4.7	308	2.4	355	1.9	398	2.1	2615.0
999	29	5123.8	7	24.1	0.8	0	0.0	0.0	12	1.4	2	1.7	8	5.4	68.8
	1060	140.2	178	16.8	2.2	5	0.5	4.0	361	2.3	435	1.7	483	2.0	2989.5

CND RATE (% OF SORTIES)---------: 0.2

MEAN TIME BETWEEN DEMANDS-------: 341.6

SORTY SUCCESS RATE (%)----------: 99.3

WHNCDP = 744.0

DIRECT RADAR SCOPE RECORDING SYSTEM
INTERMEDIATE LEVEL
LRU MAINTAINABILITY SUMMARY

03/09/79

LOCATION: SUMMARY
FLIGHT HOURS: 148589.0

TIME FRAME: SUM
END OF MONTH AIRCRAFT INVENTORY: 86

SORTIES: 111585

LRU	WUC	NUMBER OF SHOP ARRIVALS	MEAN TYME BETWEEN ARRIVALS	NUMBER SHOP NO FAULTS	PERCENT OF NO FAULT ARRIVALS	MEAN TURN AROUND TIME (DAYS)	NUMBER SHOP REPAIRS	MEAN TURN AROUND REPAIR (DAYS)	MEAN TIME TO REPAIR (HRS)	NUMBER NRTS	MEAN TURN AROUND NRTS (DAYS)	SHOP MAINTENANCE MAN HOURS
120	77J10	143	1039.1	95	66.4	13.9	72	17.2	1.9	2	8.5	390.8
130	77J20	57	2606.8	50	87.7	3.5	55	3.4	1.4	2	0.5	221.1
		200	742.9	145	72.5	10.3	127	11.2	1.7	4	4.5	611.9

NRTS RATE (%)-------------------: 2.0

MEAN TIME BETWEEN REPAIR (MTBR)=: 2701.6

MEAN TURN AROUND TIME (MTAT)====: 10.7

CONFIRMED FAILURES PER FLIGHT===: 0.000

XNRTS2 = 0.0

DIRECT RADAR SCOPE RECORDING SYSTEM
INTERMEDIATE LEVEL
SRU MAINTAINABILITY SUMMARY

03/09/79

LOCATION: SUMMARY
FLIGHT HOURS: 148589.0

TIME FRAME: SUM
END OF MONTH AIRCRAFT INVENTORY: 86

SORTIES: 111585

LRU	WUC	PART NUMBER	NUMBER OF SHOP DEMANDS	MEAN TIME BETWEEN DEMANDS	NUMBER SHOP NO FAULT	MEAN TURN AROUND TIME NO FAULT	NUMBER SHOP REPAIRS	MEAN TURN AROUND TIME (DAYS)	MEAN TIME TO REPAIR (HRS)	NUMBER NRTS	MEAN TURN AROUND TIME (DAYS)	SHOP MAINTENANCE MAN HOURS
120	77J1D	A05A00342A	0	0.0	0	0.0	0	0.0	0.0	0	0.0	0.0
130	77J2K	AU5A0104-1	1	148588.8	0	0.0	1	0.5	1.2	0	0.0	2.5
130	77J2A	AU5A0105-1	1	148588.8	0	0.0	1	0.5	3.0	0	0.0	3.0
130	77J2K	A03A01041	6	24764.8	1	40.0	5	9.0	1.2	0	0.0	10.6
130	77J2A	A03A01051	4	37147.2	0	0.0	4	2.4	1.8	0	0.0	11.8
130	77J2B	A03A0003-1	1	148588.8	0	0.0	1	0.5	1.5	0	0.0	1.5
130	77J2K	A05A0104-1	10	14858.9	5	203.0	5	202.8	1.1	0	0.0	25.8
130	77J2A	A05A0104-1	2	74294.4	0	0.0	2	0.5	1.0	0	0.0	4.0
130	77J2K	A05A0104-1	124	1198.3	45	25.1	77	42.8	2.0	2	532.5	372.5
130	77J2D	A05A0104-1	1	148588.8	1	0.5	0	0.0	0.0	0	0.0	1.0
130	77J2K	A05A0104-1	13	11429.9	8	1.0	5	1.8	1.9	0	0.0	37.2
130	77J2A	A05A0104-1	1	148588.8	0	0.0	1	0.5	3.7	0	0.0	7.3
130	77J2K	A05A0104-1	35	4245.4	10	0.7	25	2.4	2.0	0	0.0	105.8
130	77J2A	A05A0104-1	1	148588.8	0	0.0	1	0.5	1.2	0	0.0	2.3
130	77J2K	A05A0104-1	7	21227.0	4	0.5	3	0.7	2.7	0	0.0	23.0
130	77J2A	A05A0104-1	1	148588.8	0	0.0	1	0.5	2.0	0	0.0	4.0
130	77J2K	A05A0104-1	61	2435.9	24	2.3	33	5.0	2.4	4	48.2	171.1
130	77J2A	A05A0104-1	0	0.0	0	0.0	0	0.0	0.0	0	0.0	0.0
130	77J2K	A05A01041	48	3095.6	7	0.6	38	3.1	2.3	3	2.8	193.0
130	77J2A	A05A01041	2	74294.4	1	0.5	1	0.5	4.0	0	0.0	11.0
130	77J2K	A05A01041	3	49529.6	0	0.0	3	14.5	2.6	0	0.0	14.7
130	77J2A	A05A01041	1	148588.8	0	0.0	1	1.0	0.7	0	0.0	1.5
130	77J2K	A05A01041	10	14858.9	1	0.5	9	2.7	1.5	0	0.0	25.3
130	77J2A	A05A01041	1	148588.8	0	0.0	1	1.0	2.0	0	0.0	4.0
130	77J2K	A05A01044	1	148588.8	0	0.0	1	1.0	1.1	0	0.0	2.2
130	77J2A	A05A0105-1	16	9286.8	4	3.4	12	1.0	1.3	0	0.0	29.6
130	77J2K	A05A0105-1	1	148588.8	0	0.0	1	6.0	8.4	0	0.0	13.3
130	77J2A	A05A0105-1	66	2251.3	19	3.5	47	5.9	1.2	0	0.0	114.5
130	77J2K	A05A0105-1	1	148588.8	0	0.0	1	3.0	1.5	0	0.0	3.0
130	77J2A	A05A0105-14EAFT	11	13508.1	1	1.0	10	2.2	1.8	0	0.0	32.3
130	77J2K	A05A01051	2	74294.4	0	0.0	2	5.0	3.0	0	0.0	6.0
130	77J2A	A05A01051	19	7820.5	1	0.5	18	41.5	1.5	0	0.0	55.4
130	77J2K	A05A01051	1	148588.8	1	1.0	0	0.0	0.0	0	0.0	2.0
130	77J2A	A05A0108-1	11	13508.1	0	0.0	11	1.6	1.2	0	0.0	22.6
130	77J2K	A05A104-1	8	18573.6	0	0.0	8	2.0	2.1	0	0.0	26.8
130	77J2A	A050A01051	1	148588.8	0	0.0	1	1.0	0.8	0	0.0	1.7
130	77J2K	A050104-1	3	49529.6	0	0.0	3	6.7	3.0	0	0.0	16.0
130	77J2A	A14A0065-1	2	74294.4	0	0.0	2	1.2	2.5	0	0.0	9.8

LRU	WUC	PART NUMBER	NUMBER OF SHOP DEMANDS	MEAN TIME BETWEEN DEMANDS	NUMBER SHOP NO FAULT	MEAN TURN AROUND TIME NO FAULT	NUMBER SHOP REPAIRS	MEAN TURN AROUND TIME (DAYS)	MEAN TIME TO REPAIR (HRS)	NUMBER NRTS	MEAN TURN AROUND TIME (DAYS)	SHOP MAINTENANCE MAN HOURS
130	177J2K	1A14A00661	0	0.0	0	0.0	0	0.0	0.0	0	0.0	0.0
130	177J2A	18GE198	1	148588.8	0	0.0	1	11.0	1.5	0	0.0	3.0
130	177J2M	1J72E0001	1	148588.8	0	0.0	1	0.5	0.7	0	0.0	1.5
130	177J2A	1J72E0001-1	1	148588.8	0	0.0	1	36.0	0.5	0	0.0	0.5
130	177J2K	132-87688-301	3	49529.6	1	1279.0	2	0.5	3.1	0	0.0	15.7
130	177J2B	132876013	1	148588.8	1	1.0	0	0.0	0.0	0	0.0	1.0
130	177J2K	153879121	2	74294.4	1	2.0	1	4.0	4.0	0	0.0	9.0
130	177J2C	169-4003	1	148588.8	0	0.0	1	0.5	1.1	0	0.0	2.2
130	177J2A	177J2A	1	148588.8	0	0.0	1	0.5	1.0	0	0.0	2.0
999	177JZK	1A05A0104-1	0	0.0	0	0.0	0	0.0	0.0	0	0.0	0.0
999	177JZA	1405A01051	1	148588.8	1	8.0	0	0.0	0.0	0	0.0	9.0
			489	303.9	137	26.5	343	17.5	1.9	9	140.7	1411.7

NRTS RATE (X)-------------------: 1.8

MEAN TIME BETWEEN REPAIR (MTBR)=: 422.1

XNRTS2 = 0.0

AN/APQ-130 ATTACK RADAR
ORGANIZATIONAL LEVEL
MAINTAINABILITY SUMMARY

03/09/79

LOCATION: SUMMARY
FLIGHT HOURS: 14539.0

TIME FRAME: SUM
END OF MONTH AIRCRAFT INVENTORY: 77

SORTIES: 6037

LRU	FLIGHT LINE MAINT	MEAN TIME BETWEEN MAINT (FH)	NUMBER CND ACTIONS	CND AS % OF LINE MAINT	MEAN MAINT TIME CND (HRS)	NUMBER CANNIB ACTIONS	CANN AS % OF LINE MAINT	MEAN MAINT TIME CANN (HRS)	NUMBER REPAIR IN PLACE ACTIONS	MEAN MAINT TIME RIPS (HRS)	NUMBER REMOVAL (DEMAND) ACTIONS	MEAN MAINT TIME REMOVL (HRS)	NUMBER OTHER ACTIONS	MEAN MAINT TIME OTHER (HRS)	LINE MAINT MAN HOURS
10	277	52.5	4	1.4	2.5	11	4.0	2.8	20	3.3	310	5.6	41	3.6	1982.7
20	772	18.8	15	2.1	1.6	100	13.0	3.5	77	4.1	692	3.8	143	3.0	3717.6
30	5	2907.8	0	0.0	0.0	0	0.0	0.0	3	2.3	1	2.0	2	1.0	10.8
40	586	24.8	3	0.5	1.8	34	5.8	5.1	31	3.3	607	4.3	103	3.3	3210.2
50	165	88.1	0	0.0	0.0	8	4.8	2.9	9	1.2	162	3.5	36	2.4	689.8
60	169	85.0	1	0.6	1.8	34	20.1	2.9	9	2.3	138	3.1	48	2.9	689.4
70	260	55.9	2	0.8	1.0	5	1.9	4.0	16	4.0	303	5.6	43	4.5	1968.0
90	300	48.5	1	0.3	18.0	16	5.3	6.0	13	2.4	291	3.9	57	2.3	1421.4
100	109	133.4	2	1.8	6.1	8	7.3	5.5	31	5.0	85	7.9	25	4.5	991.7
110	217	67.0	0	0.0	0.0	11	5.1	6.1	157	2.6	77	5.2	40	3.3	1011.3
999	1026	14.2	265	25.8	3.2	5	0.5	2.0	384	3.4	32	4.8	519	6.3	5556.4
	3886	3.7	294	7.6	3.1	232	6.0	4.0	750	3.3	2698	4.4	1057	4.7	21249.4

CND RATE (% OF SORTIES)--------: 4.9

MEAN TIME BETWEEN DEMANDS------: 5.4

SORTY SUCCESS RATE (%)---------: 47.8

WHNCDP = 3151.0

AN/APQ-130 ATTACK RADAR
INTERMEDIATE LEVEL
LRU MAINTAINABILITY SUMMARY

03/09/79

LOCATION: SUMMARY
FLIGHT HOURS: 14539.0

TIME FRAME: SUM
END OF MONTH AIRCRAFT INVENTORY: 77

SORTIES: 6037

LRU	WUC	NUMBER OF SHOP ARRIVALS	MEAN TIME BETWEEN ARRIVALS	NUMBER SHOP NO FAULTS	PERCENT OF NO FAULT ARRIVALS	MEAN TURN AROUND TIME (DAYS)	NUMBER SHOP REPAIRS	MEAN TURN AROUND REPAIR (DAYS)	MEAN TIME TO REPAIR (HRS)	NUMBER NRTS	MEAN TURN AROUND NRTS (DAYS)	SHOP MAINTENANCE MAN HOURS
10	73PA0	310	46.9	20	6.5	58.2	383	28.5	10.6	3	29.3	7312.6
20	73PB0	701	20.7	250	35.7	18.3	517	25.8	9.6	31	82.9	9814.7
30	73PC0	3	4846.3	0	0.0	0.0	1	87.5	8.8	1	22.0	9.8
40	73PD0	595	24.4	162	27.2	16.5	543	16.3	7.4	135	29.8	7805.2
50	73PF0	143	101.7	66	46.2	2.1	114	39.2	6.3	5	35.4	1222.5
60	73PH0	133	109.3	37	27.8	7.5	89	33.1	7.0	43	8.2	1267.8
70	73PK0	277	52.5	59	21.3	24.1	336	18.2	8.1	9	19.0	4060.1
80	73PL0	1	14539.0	0	0.0	0.0	0	0.0	0.0	1	4.0	1.0
90	73PM0	297	49.0	99	33.3	1.5	250	20.4	6.7	4	1.4	2806.7
100	73PP0	82	177.3	9	11.0	22.4	71	69.6	4.9	24	65.5	611.8
110	73PQ0	20	726.9	6	30.0	11.2	21	63.1	2.7	4	14.5	104.1
999	73PC0	2	7269.5	0	0.0	0.0	0	0.0	0.0	1	1.0	0.5
999	73PN0	1	14539.0	0	0.0	0.0	1	3.0	2.5	0	0.0	5.0
		2565	5.7	708	27.6	15.1	2536	24.7	8.3	261	34.6	35022.0

NRTS RATE (%)--------------------: 10.2

MEAN TIME BETWEEN REPAIR (MTBR)-: 7.8

MEAN TURN AROUND TIME (MTAT)----: 22.5

CONFIRMED FAILURES PER FLIGHT---: 0.308

XNRTS2 = 0.0

AN/APQ-130 ATTACK RADAR
INTERMEDIATE LEVEL
SRU MAINTAINABILITY SUMMARY

03/09/79

LOCATION: SUMMARY
FLIGHT HOURS: 14539.0

TIME FRAME: SUM
END OF MONTH AIRCRAFT INVENTORY: 77

SORTIES: 6037

LRU	WUC	PART NUMBER	NUMBER OF SHOP DEMANDS	MEAN TIME BETWEEN DEMANDS	NUMBER SHOP NO FAULT	MEAN TURN AROUND TIME NO FAULT	NUMBER SHOP REPAIRS	MEAN TURN AROUND TIME (DAYS)	MEAN TIME TO REPAIR (HRS)	NUMBER NRTS	MEAN TURN AROUND TIME (DAYS)	SHOP MAINTENANCE MAN HOURS
10	73PAA	012-105833-3	1	14539.0	0	0.0	0	0.0	0.0	1	16.0	0.3
10	73PAC	2421059005	3	4846.3	0	0.0	0	0.0	0.0	3	1.7	2.5
10	73PAD	342-102930-5	1	14539.0	0	0.0	0	0.0	0.0	1	2.0	0.5
10	73PAA	342-105-833-8	1	14539.0	0	0.0	0	0.0	0.0	1	4.0	15.0
10	73PAC	342-105000-8	4	3634.7	0	0.0	0	0.0	0.0	4	8.5	7.3
10	73PAB	342-105396-2	3	4846.3	0	0.0	0	0.0	0.0	3	1.7	1.5
10	73PAC	342-105601-2	1	14539.0	0	0.0	0	0.0	0.0	1	14.0	0.3
10	73PAA	342-105833-8	7	2077.0	0	0.0	2	98.5	3.0	5	276.2	12.9
10	73PAH	342-105833-8	1	14539.0	0	0.0	1	1306.0	0.7	0	0.0	0.7
10	73PAA	342-105833-8	3	4846.3	0	0.0	0	0.0	0.0	3	390.0	3.3
10	73PAH	342-105833-8	1	14539.0	0	0.0	1	1285.0	0.7	0	0.0	0.7
10	73PAA	342-105833-8	2	7269.5	0	0.0	0	0.0	0.0	2	4.0	0.8
10	73PAH	342-105833-8	2	7269.5	0	0.0	2	749.5	0.7	0	0.0	1.3
10	73PAA	342-105833-8	16	908.7	0	0.0	7	84.6	0.7	9	51.2	15.7
10	73PAH	342-105833-8	1	14539.0	0	0.0	1	29.0	0.7	0	0.0	0.7
10	73PAA	342-105833-8	4	3634.7	0	0.0	4	3.6	0.7	0	0.0	2.7
10	73PAE	342-10590-5	1	14539.0	0	0.0	0	0.0	0.0	1	20.0	2.0
10	73PAC	342-105900-8	51	285.1	1	8.0	3	48.3	2.8	47	35.7	62.3
10	73PAA	342-105900-8	1	14539.0	0	0.0	0	0.0	0.0	1	1333.0	0.5
10	73PAC	342-105900-8	26	559.2	2	4.0	2	9.5	1.5	22	156.0	37.6
10	73PAA	342-105900-8	1	14539.0	0	0.0	1	37.0	4.0	0	0.0	16.0
10	73PAC	342-105900-8	29	501.3	7	4.1	7	5.9	2.4	15	12.4	62.5
10	73PAL	342-105900-8	2	7269.5	0	0.0	0	0.0	0.0	2	0.5	2.0
10	73PAC	342-105900-8	14	1038.5	1	2.0	0	0.0	0.0	13	5.2	18.3
10	73PAD	342-105920-1	21	692.3	2	24.5	6	27.7	2.6	13	3.8	42.4
10	73PAE	342-105930-5	17	855.2	0	0.0	3	4.7	4.1	14	5.6	32.0
10	73PAG	342-105930-5	1	14539.0	0	0.0	0	0.0	0.0	1	4.0	0.5
10	73PAE	342-105930-5	20	726.9	6	8.0	2	7.5	1.1	12	6.8	27.0
10	73PAC	342-105930-5	1	14539.0	0	0.0	0	0.0	0.0	1	4.0	2.0
10	73PAE	342-1059305	14	1038.5	0	0.0	3	6.7	1.5	11	5.4	19.8
10	73PAB	342-105936-2	22	660.9	0	0.0	5	16.0	0.7	17	75.5	17.9
10	73PAA	342-105980-6	3	4846.3	0	0.0	0	0.0	0.0	3	14.7	22.0
10	73PAC	342-10599-8	1	14539.0	0	0.0	1	14.0	1.0	0	0.0	2.0
10	73PAF	342-106413-1	10	1453.9	1	3.0	1	23.0	8.0	8	141.5	23.8
10	73PAC	342-108900-8	0	0.0	0	0.0	0	0.0	0.0	0	0.0	0.0
10	73PAD	342-108920-1	1	14539.0	0	0.0	1	5.0	2.5	0	0.0	5.0
10	73PAC	342-405900-8	2	7269.5	0	0.0	2	5.5	0.9	0	0.0	3.3
10	73PAE	3421054305	2	7269.5	0	0.0	0	0.0	0.0	2	6.0	1.0

LRU	WUC	PART NUMBER	NUMBER OF SHOP DEMANDS	MEAN TIME BETWEEN DEMANDS	NUMBER SHOP NO FAULT	MEAN TURN AROUND TIME NO FAULT	NUMBER SHOP REPAIRS	MEAN TURN AROUND TIME (DAYS)	MEAN TIME TO REPAIR (HRS)	NUMBER NRTS	MEAN TURN AROUND TIME (DAYS)	SHOP MAINTENANCE MAN HOURS
10	73PAA	3421058338	6	2423.2	0	0.0	1	1373.0	4.2	5	36.4	10.8
10	73PAC	3421059008	17	855.2	0	0.0	5	278.4	2.3	12	8.4	30.0
10	73PAD	3421059201	5	2907.8	0	0.0	3	24.0	2.2	2	53.0	14.5
10	73PAE	3421059305	5	2907.8	0	0.0	1	19.0	4.2	4	9.5	8.8
10	73PAC	3421059305	1	14539.0	0	0.0	0	0.0	0.0	1	6.0	2.0
10	73PAB	3421059352	2	7269.5	0	0.0	0	0.0	0.0	2	7.0	0.8
10	73PAA	3421059805	1	14539.0	0	0.0	0	0.0	0.0	1	14.0	8.0
10	73PAF	3421064131	1	14539.0	0	0.0	1	16.0	1.0	0	0.0	2.0
10	73PAE	3424059305	1	14539.0	1	1.0	0	0.0	0.0	0	0.0	0.5
10	73PAC	356255600101	1	14539.0	0	0.0	0	0.0	0.0	1	7.0	0.3
10	73PAA	755003-10	41	354.6	1	6.0	0	0.0	0.0	40	94.7	35.4
10	73PAG	85644-505-21	1	14539.0	0	0.0	0	0.0	0.0	1	3.0	0.5
10	73PAJ	879005061	1	14539.0	0	0.0	0	0.0	0.0	1	58.0	0.4
10	73PAD	89000-505-101	1	14539.0	0	0.0	1	1224.0	8.0	0	0.0	12.5
10	73PAC	89000-505-101	1	14539.0	0	0.0	1	5.0	15.5	0	0.0	29.5
10	73PAA	89000-506-101	0	0.0	0	0.0	0	0.0	0.0	0	0.0	0.0
10	73PAC	89000-505-101	1	14539.0	0	0.0	1	1.0	0.3	0	0.0	0.3
10	73PAA	8900506101	3	4846.3	0	0.0	0	0.0	0.0	3	0.7	2.5
10	73PAD	8900506101	1	14539.0	0	0.0	1	8.0	3.0	0	0.0	6.0
10	73PAA	8901150611	53	274.3	0	0.0	45	231.4	16.0	8	126.0	1284.2
10	73PAG	8994450621	12	1211.6	0	0.0	2	841.5	7.7	10	11.6	23.4
20	73PBP	5-505-71	1	14539.0	0	0.0	0	0.0	0.0	1	6.0	1.0
20	73PBN	592856-1	1	14539.0	0	0.0	0	0.0	0.0	1	1.0	0.3
20	73PBM	58870-505-41	1	14539.0	1	15.0	0	0.0	0.0	0	0.0	0.7
20	73PBA	65415-505-31	6	2423.2	3	14.3	1	8.0	1.0	2	8.5	6.5
20	73PBD	65430-505-51	1	14539.0	0	0.0	0	0.0	0.0	1	22.0	1.0
20	73PBJ	65440-505-1	4	3634.7	1	11.0	2	3.5	0.7	1	7.0	2.5
20	73PBK	65440-505-1	3	4846.3	1	17.0	0	0.0	0.0	2	8.5	2.7
20	73PBJ	65440-505-1	4	3634.7	2	521.0	0	0.0	0.0	2	20.5	6.2
20	73PBQ	55465506-31	4	3634.7	2	9.0	0	0.0	0.0	2	12.0	6.5
20	73PBD	65430-505-51	2	7269.5	0	0.0	2	14.5	0.7	0	0.0	1.3
20	73PBF	6551550621	32	454.3	7	160.9	2	9.0	0.5	23	40.8	35.6
20	73PBD	655205061	11	1321.7	2	9.0	1	1012.0	0.5	8	6.7	11.0
20	73PBK	66525-505-71	5	2907.8	1	6.0	3	21.3	0.7	1	23.0	3.2
20	73PBR	65525-505-71	1	14539.0	0	0.0	0	0.0	0.0	1	6.0	1.0
20	73PBK	6552550671	2	7269.5	1	16.0	0	0.0	0.0	1	1.0	2.7
20	73PBC	66530-505-1	1	14539.0	0	0.0	0	0.0	0.0	1	1069.0	1.0
20	73PBL	66530-505-21	3	4846.3	1	30.0	1	1.0	0.7	1	72.0	2.3
20	73PBK	65530-505-21	3	4846.3	0	0.0	0	0.0	0.0	3	8.3	3.0
20	73PBL	65530-505-21	22	660.9	6	8.2	12	3.3	0.7	4	10.0	17.3
20	73PBK	66530-505-21	1	14539.0	0	0.0	0	0.0	0.0	1	1.0	0.5
20	73PBL	65530-505-21	10	1453.9	4	267.5	1	10.0	0.7	5	13.0	6.3
20	73PBC	65530-505-21	1	14539.0	1	9.0	0	0.0	0.0	0	0.0	0.7
20	73PBL	66530-505-21	2	7269.5	0	0.0	0	0.0	0.0	2	549.5	1.5
20	73PBC	66530-505-21	1	14539.0	1	5.0	0	0.0	0.0	0	0.0	0.7

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20	73PBL	66530-505-21	10	1453.9	1	7.0	2	3.7	0.6	7	32.3	7.7
20	73PBC	66530-506-21	1	14539.0	0	0.0	0	0.0	0.0	1	81.0	0.5
20	73PBL	66530-505-21	10	1453.9	3	7.3	0	0.0	0.0	7	8.3	17.0
20	73PBH	66530-505-21	1	14539.0	0	0.0	0	0.0	0.0	1	0.5	0.3
20	73PBL	66530-506-21	2	7269.5	0	0.0	0	0.0	0.0	2	0.5	2.5
20	73PBC	66535-505-1	1	14539.0	1	2.0	0	0.0	0.0	0	0.0	0.7
20	73PBE	66535-505-21	1	14539.0	0	0.0	1	0.5	0.7	0	0.0	0.7
20	73PBF	66535-505-21	1	14539.0	1	23.0	0	0.0	0.0	0	0.0	0.7
20	73PBE	66535-505-21	2	7269.5	1	3.0	1	15.0	0.7	0	0.0	1.3
20	73PBF	66535-505-21	1	14539.0	1	2.0	0	0.0	0.0	0	0.0	0.7
20	73PBE	66565-505-21	15	969.3	5	5.2	1	0.5	0.7	9	12.8	17.3
20	73PBK	6658050671	36	403.9	7	12.3	8	33.6	1.2	21	61.2	35.9
20	73PBC	6660-506-21	1	14539.0	0	0.0	0	0.0	0.0	1	1067.0	1.0
20	73PBG	66650-505-1	2	7269.5	1	6.0	0	0.0	0.0	1	7.0	1.7
20	73PBC	66660-505-21	2	7269.5	1	17.0	0	0.0	0.0	1	1067.0	4.0
20	73PBB	87300-506-51	1	14539.0	0	0.0	1	0.5	0.5	0	0.0	1.0
20	73PBD	88500-505-151	5	2907.8	0	0.0	4	1.0	1.2	1	1.0	10.4
20	73PBP	88500-505-151	1	14539.0	0	0.0	0	0.0	0.0	1	1.0	0.5
20	73PBE	88500-505-151	1	14539.0	0	0.0	0	0.0	0.0	1	0.5	0.5
20	73PBD	88500-505-151	0	0.0	0	0.0	0	0.0	0.0	0	0.0	0.0
20	73PBP	8855-506-71	1	14539.0	0	0.0	0	0.0	0.0	1	6.0	1.0
20	73PBB	8873050621	12	1211.6	2	11.7	3	82.0	2.0	7	16.4	14.4
20	73PBG	88750-505-31	1	14539.0	1	13.0	0	0.0	0.0	0	0.0	1.0
20	73PBK	88825-505-41	1	14539.0	0	0.0	0	0.0	0.0	1	5.0	0.5
20	73PBH	8883550621	6	2423.2	1	7.0	2	47.0	1.4	3	21.3	7.8
20	73PBN	8885050621	13	1118.4	3	12.0	0	0.0	0.0	10	6.2	9.6
20	73PBP	88855-505-71	9	1615.4	1	2.0	4	8.0	0.7	4	5.7	6.2
20	73PBM	88855-505-71	1	14539.0	0	0.0	1	16.0	0.7	0	0.0	0.7
20	73PBP	88855-506-71	49	296.7	5	13.4	16	141.2	0.7	28	35.1	41.3
20	73PBR	88855-505-71	1	14539.0	0	0.0	0	0.0	0.0	1	80.0	1.0
20	73PBP	8885550631	41	354.6	2	14.5	8	19.6	0.7	31	10.8	35.5
20	73PBM	88870-506-51	20	726.9	7	10.0	2	4.0	0.7	11	5.2	18.9
20	73PBN	88870-505-51	1	14539.0	0	0.0	1	11.0	0.7	0	0.0	0.7
20	73PBM	8887050651	38	382.6	9	16.1	8	15.4	0.7	21	128.7	32.6
20	73PBP	88885-505-71	2	7269.5	0	0.0	1	20.0	0.7	1	7.0	1.7
20	73PBE	8896050651	6	2423.2	2	7.5	0	0.0	0.0	4	10.5	6.7
20	73PBC	88970-505-31	2	7269.5	0	0.0	0	0.0	0.0	2	34.0	2.0
30	73PCC		1	14539.0	0	0.0	1	298.0	2.4	0	0.0	2.4
30	73PCD	38560-505-41	1	14539.0	0	0.0	0	0.0	0.0	1	4.0	0.3
30	73PCG	584188900-506-2	1	14539.0	0	0.0	0	0.0	0.0	1	0.5	0.5
30	73PCA	6540550631	26	559.2	2	0.5	2	151.5	1.8	22	62.6	24.7
30	73PCC	6505-506-1	1	14539.0	0	0.0	0	0.0	0.0	1	9.0	0.3
30	73PCK	6650-506-21	1	14539.0	0	0.0	1	15.0	0.7	0	0.0	0.7
30	73PCF	66510-505-31	15	969.3	2	4.0	5	58.1	0.9	8	158.5	14.6
30	73PCH	66540-505-1	3	4846.3	0	0.0	0	0.0	0.0	3	19.7	3.5

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30	73PCJ	66545-505-1	3	4846.3	1	15.0	0	0.0	0.0	2	6.0	2.0
30	73PCT	66545-505-1	1	14539.0	0	0.0	1	84.0	1.1	0	0.0	1.1
30	73PCJ	665455061	5	2907.8	0	0.0	1	16.0	2.0	4	7.2	6.0
30	73PCB	6555-506-21	1	14539.0	0	0.0	0	0.0	0.0	1	2.0	0.3
30	73PCK	6655050621	12	1211.6	2	4.5	8	4.7	0.7	2	5.7	7.7
30	73PCB	66555-505-21	5	2907.8	0	0.0	2	4.2	0.7	3	3.0	4.3
30	73PCL	66605-505-1	9	1615.4	1	1.0	1	6.0	1.0	7	11.0	13.0
30	73PCD	88500-506-151	5	2907.8	0	0.0	2	2.7	0.7	3	4.7	2.1
30	73PCC	88500-505-41	2	7269.5	0	0.0	0	0.0	0.0	2	42.0	4.0
30	73PCD	88500-505-41	1	14539.0	0	0.0	0	0.0	0.0	1	60.0	2.0
30	73PCC	8855050651	80	181.7	8	264.1	20	51.8	1.4	52	28.6	94.7
30	73PCD	88560-505-41	42	346.2	3	8.0	24	60.7	1.8	15	20.9	57.4
30	73PCC	88560-505-41	1	14539.0	0	0.0	0	0.0	0.0	1	55.0	4.0
30	73PCD	8856050641	15	969.3	3	22.7	1	32.0	1.2	11	15.5	22.3
30	73PCG	88700-505-21	1	14539.0	0	0.0	0	0.0	0.0	1	28.0	2.0
30	73PCC	88850-506-51	1	14539.0	1	14.0	0	0.0	0.0	0	0.0	4.0
30	73PCE	88855-505-71	4	3634.7	0	0.0	2	7.7	0.7	2	12.0	2.3
30	73PCC	88855-505-81	1	14539.0	0	0.0	0	0.0	0.0	1	19.0	1.0
30	73PCE	88885-506-121	2	7269.5	0	0.0	1	25.0	0.7	1	0.5	2.7
30	73PCG	88885-505-121	1	14539.0	0	0.0	1	3.0	0.7	0	0.0	0.7
30	73PCE	88885506131	29	501.3	9	10.8	3	593.3	0.7	17	46.4	28.0
30	73PCG	88900-505-41	44	330.4	6	11.5	14	162.7	0.7	24	83.5	32.2
30	73PCF	88900-505-41	1	14539.0	0	0.0	0	0.0	0.0	1	6.0	1.0
30	73PCG	8890050641	11	1321.7	2	10.5	2	49.5	0.6	7	171.3	9.7
30	73PCH	88925-505-41	3	4846.3	2	10.0	0	0.0	0.0	1	5.0	3.0
30	73PCJ	8893050651	2	7269.5	0	0.0	0	0.0	0.0	2	7.0	1.0
30	73PCK	8893550651	11	1321.7	1	125.0	7	10.9	0.6	3	43.7	7.3
30	73PCB	88940-505-21	1	14539.0	0	0.0	0	0.0	0.0	1	28.0	1.0
30	73PCF	88975-505-71	4	3634.7	3	5.7	0	0.0	0.0	1	6.0	7.3
30	73PCK	8935-506-61	1	14539.0	0	0.0	0	0.0	0.0	1	1169.0	2.0
40	73PDC	11693-505-1	1	14539.0	1	1241.0	0	0.0	0.0	0	0.0	0.7
40	73PDC	116935061	1	14539.0	0	0.0	0	0.0	0.0	1	2.0	0.5
40	73PDB	65100-506-21	2	7269.5	0	0.0	0	0.0	0.0	2	3.5	1.4
40	73PDA	55395-505-21	88	165.2	4	273.7	19	65.7	1.1	65	48.0	141.4
40	73PDB	65395-505-21	1	14539.0	0	0.0	0	0.0	0.0	1	1.0	2.5
40	73PDA	6539550621	88	165.2	0	0.0	1	9.0	4.7	87	18.7	83.6
40	73PDB	55400-505-21	7	2077.0	0	0.0	0	0.0	0.0	7	5.1	8.0
40	73PDA	65400-505-21	0	0.0	0	0.0	0	0.0	0.0	0	0.0	0.0
40	73PDB	6540050621	48	302.9	2	6.0	1	18.0	2.5	45	31.9	47.3
40	73PDD	66209-505-1	1	14539.0	0	0.0	0	0.0	0.0	1	1.0	0.5
40	73PDB	66520-505-1	2	7269.5	2	15.5	0	0.0	0.0	0	0.0	3.0
40	73PDA	65700-505-31	2	7269.5	0	0.0	0	0.0	0.0	2	4.0	4.0
40	73PDB	66700-506-31	1	14539.0	0	0.0	0	0.0	0.0	1	27.0	0.5
40	73PDC	66700-505-31	1	14539.0	0	0.0	0	0.0	0.0	1	1.0	0.3
40	73PDA	55700-505-31	1	14539.0	0	0.0	0	0.0	0.0	1	1.0	0.5

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40	73PDC	65700-505-31	2	7269.5	0	0.0	1	1.0	1.8	1	1042.0	4.8
40	73PDA	6670050631	4	3634.7	0	0.0	0	0.0	0.0	4	2.1	3.4
40	73PDL	66709-505-1	3	4846.3	0	0.0	0	0.0	0.0	3	19.3	1.1
40	73PDF	65709-505-1	1	14539.0	0	0.0	0	0.0	0.0	1	7.0	0.5
40	73PDD	66709-505-1	6	2423.2	0	0.0	0	0.0	0.0	6	5.8	8.3
40	73PDC	66711-506-11	73	199.2	0	0.0	31	23.5	0.7	42	46.1	46.6
40	73PDD	55711-505-11	2	7269.5	0	0.0	1	34.0	0.7	1	34.0	8.7
40	73PDC	55711-505-11	13	1118.4	0	0.0	6	19.3	0.7	7	11.0	8.7
40	73PDD	65711-506-11	1	14539.0	0	0.0	0	0.0	0.0	1	1041.0	1.0
40	73PDC	5671150611	36	403.9	0	0.0	1	15.0	0.7	35	40.2	29.1
40	73PDF	55737-505-31	4	3634.7	0	0.0	0	0.0	0.0	4	2.0	2.1
40	73PDJ	55737-505-31	1	14539.0	0	0.0	1	2.0	2.0	0	0.0	4.0
40	73PDF	5673750631	3	4846.3	0	0.0	0	0.0	0.0	3	1.7	1.3
40	73PDC	67711-505-1	1	14539.0	0	0.0	0	0.0	0.0	1	2.0	0.5
40	73PDD	57951-401-21	1	14539.0	1	13.0	0	0.0	0.0	0	0.0	4.0
40	73PDE	8840050611	29	501.3	2	13.5	3	44.3	0.7	24	9.3	24.3
40	73PDC	88560-505-41	1	14539.0	1	7.0	0	0.0	0.0	0	0.0	0.5
50	73PFA	0-505-21	2	7269.5	0	0.0	1	5.0	0.7	1	2.0	1.2
50	73PFP	65355-505-21	1	14539.0	0	0.0	0	0.0	0.0	1	2.0	0.3
50	73PFA	65440-505-1	1	14539.0	1	3.0	0	0.0	0.0	0	0.0	0.7
50	73PFB	65900-505-1	1	14539.0	0	0.0	0	0.0	0.0	1	1.0	0.5
50	73PFA	65900-506-21	14	1038.5	1	57.0	8	8.1	0.7	5	11.8	7.6
50	73PFB	65900-505-21	1	14539.0	0	0.0	0	0.0	0.0	1	1.0	0.5
50	73PFA	65900-505-21	1	14539.0	0	0.0	0	0.0	0.0	1	1.0	0.3
50	73PFV	65900-505-21	1	14539.0	0	0.0	1	16.0	0.7	0	0.0	0.7
50	73PFA	6590050641	63	230.8	3	13.0	16	17.9	0.7	44	38.0	39.9
50	73PFB	6590550621	19	765.2	1	51.0	8	11.8	0.7	10	14.2	9.6
50	73PFE	659205061	3	4846.3	0	0.0	1	289.0	1.1	2	4.0	1.6
50	73PFL	65925506-21	2	7269.5	0	0.0	0	0.0	0.0	2	41.5	0.8
50	73PFN	65950-506-21	1	14539.0	0	0.0	0	0.0	0.0	1	1.0	0.5
50	73PFP	5595550621	1	14539.0	0	0.0	0	0.0	0.0	1	1.0	0.3
50	73PFG	65965-505-1	3	4846.3	0	0.0	0	0.0	0.0	3	15.3	0.8
50	73PFH	65970-505-31	1	14539.0	0	0.0	0	0.0	0.0	1	25.0	2.0
50	73PFS	55980-505-21	3	4846.3	0	0.0	0	0.0	0.0	3	3.3	0.7
50	73PFT	65990-505-41	4	3634.7	0	0.0	0	0.0	0.0	4	18.0	2.5
50	73PFP	66035-505-24	1	14539.0	0	0.0	0	0.0	0.0	1	5.0	0.3
50	73PFF	663355062	2	7269.5	0	0.0	0	0.0	0.0	2	0.5	0.7
50	73PFJ	66340-505-1	1	14539.0	0	0.0	0	0.0	0.0	1	5.0	0.5
50	73PFN	553505061	23	632.1	0	0.0	1	289.0	1.1	22	12.4	13.0
50	73PFP	6635550621	14	1038.5	0	0.0	1	246.0	1.1	13	117.9	9.1
50	73PFQ	66360-505-1	1	14539.0	0	0.0	0	0.0	0.0	1	1.0	0.3
50	73PFK	66365-505-1	4	3634.7	0	0.0	0	0.0	0.0	4	11.0	2.3
50	73PFR	663705061	23	632.1	0	0.0	3	22.2	0.9	20	9.1	19.5
50	73PFH	66375-505-21	4	3634.7	0	0.0	1	263.0	1.0	3	11.3	2.8
50	73PFJ	66380-505-1	1	14539.0	0	0.0	0	0.0	0.0	1	34.0	1.0

LRU	WUC	PART NUMBER	NUMBER OF SHOP DEMANDS	MEAN TIME BETWEEN DEMANDS	NUMBER SHOP NO FAULT	MEAN TURN AROUND TIME NO FAULT	NUMBER SHOP REPAIRS	MEAN TURN AROUND TIME (DAYS)	MEAN TIME TO REPAIR (HRS)	NUMBER NRTS	MEAN TURN AROUND TIME (DAYS)	SHOP MAINTENANCE MAN HOURS
50	73PFC	553855061	23	532.1	0	0.0	7	2.4	0.7	16	15.1	14.7
50	73PFD	65390-505-21	2	7269.5	0	0.0	0	0.0	0.0	2	3.0	1.0
50	73PFB	73PFB	1	14539.0	0	0.0	1	8.0	0.7	0	0.0	0.7
50	73PFR	85370-505-1	2	7269.5	0	0.0	0	0.0	0.0	2	4.0	1.0
50	73PFA	89450-505-41	1	14539.0	0	0.0	1	10.0	0.7	0	0.0	0.7
50	73PFQ	85450-505-41	1	14539.0	0	0.0	1	0.5	1.0	0	0.0	1.0
50	73PFU	86466-505-1	1	14539.0	0	0.0	0	0.0	0.0	1	25.0	1.0
50	73PFV	88480-505-21	1	14539.0	0	0.0	0	0.0	0.0	1	3.0	0.3
60	73PHA	125304011	56	220.3	2	5.0	11	13.0	0.7	53	6.2	45.9
60	73PHC	42400-401-31	3	4846.3	0	0.0	0	0.0	0.0	3	3.3	0.8
60	73PHA	42420-401-11	8	1817.4	0	0.0	0	0.0	0.0	8	0.9	3.3
60	73PHB	4246240111	34	427.6	1	3.0	19	18.0	0.4	14	7.1	16.5
60	73PHC	87910-505-41	70	207.7	1	11.0	22	33.7	0.5	47	29.8	43.6
60	73PHH	89011-505-101	1	14539.0	0	0.0	1	13.0	0.7	0	0.0	0.7
70	73PKQ	4130209002	28	519.2	0	0.0	7	28.9	0.7	21	10.6	15.8
70	73PKD	452-0721-001	1	14539.0	0	0.0	0	0.0	0.0	1	2.0	0.3
70	73PKP	4760067-002	5	2907.8	0	0.0	0	0.0	0.0	5	3.6	3.3
70	73PKG	652005061	12	1211.6	0	0.0	0	0.0	0.0	12	9.9	9.1
70	73PKF	6520550621	8	1817.4	0	0.0	4	80.2	0.8	4	5.7	5.5
70	73PKJ	65210-505-21	17	855.2	0	0.0	0	0.0	0.0	17	3.4	12.0
70	73PKE	55235-505-21	5	2907.8	0	0.0	0	0.0	0.0	5	7.8	3.8
70	73PKD	65240-505-1	11	1321.7	0	0.0	0	0.0	0.0	11	4.2	6.1
70	73PKC	65245-505-1	1	14539.0	0	0.0	0	0.0	0.0	1	3.0	0.3
70	73PKL	6744050611	1	14539.0	0	0.0	0	0.0	0.0	1	3.0	2.0
70	73PKH	724550621	1	14539.0	0	0.0	0	0.0	0.0	1	206.0	0.8
70	73PKB	87240-505-1	8	1817.4	0	0.0	1	318.0	1.0	7	4.9	6.4
70	73PKH	87245-505-21	42	346.2	0	0.0	10	27.6	0.8	32	42.4	28.3
70	73PKM	87245-505-21	2	7269.5	0	0.0	0	0.0	0.0	2	1.5	0.7
70	73PKH	8725-506-21	11	1321.7	0	0.0	0	0.0	0.0	11	5.4	4.9
70	73PKF	8727550611	30	484.6	2	3.0	3	88.0	0.9	25	4.5	15.9
70	73PKE	8727550641	1	14539.0	0	0.0	0	0.0	0.0	1	0.5	2.0
70	73PKF	8727550641	1	14539.0	0	0.0	0	0.0	0.0	1	6.0	0.5
70	73PKA	87300-505-11	3	4846.3	0	0.0	0	0.0	0.0	3	3.0	1.5
70	73PKB	87300-505-21	1	14539.0	0	0.0	0	0.0	0.0	1	2.0	0.3
70	73PK3	87300-505-51	1	14539.0	0	0.0	1	1.0	3.8	0	0.0	3.8
70	73PKL	87300-505-51	3	4846.3	0	0.0	0	0.0	0.0	3	0.7	1.5
70	73PKU	87300-505-51	1	14539.0	0	0.0	1	3.0	2.7	0	0.0	2.7
70	73PKE	87300-505-51	1	14539.0	0	0.0	0	0.0	0.0	1	25.0	1.0
70	73PKD	87300-505-51	1	14539.0	0	0.0	0	0.0	0.0	1	6.0	1.0
70	73PKK	87325-505-1	10	1453.9	0	0.0	0	0.0	0.0	10	1.9	5.8
70	73PKA	87330-505-11	29	501.3	0	0.0	0	0.0	0.0	29	7.0	41.8
70	73PKH	87330-505-11	1	14539.0	0	0.0	0	0.0	0.0	1	15.0	0.5
70	73PKA	8733050611	18	807.7	0	0.0	0	0.0	0.0	18	5.2	11.3
70	73PKN	87430-505-21	1	14539.0	0	0.0	0	0.0	0.0	1	1.0	0.5
70	73PKM	8743550611	23	632.1	0	0.0	4	27.0	0.7	19	59.7	12.3

LRU	WUC	PART NUMBER	NUMBER OF SHOP DEMANDS	MEAN TIME BETWEEN DEMANDS	NUMBER SHOP NO FAULT	MEAN TURN AROUND TIME NO FAULT	NUMBER SHOP REPAIRS	MEAN TURN AROUND TIME (DAYS)	MEAN TIME TO REPAIR (HRS)	NUMBER NRTS	MEAN TURN AROUND TIME (DAYS)	SHOP MAINTENANCE MAN HOURS
70	73PKL	87440-505-11	22	560.9	2	36.5	13	13.7	0.7	7	12.9	13.1
70	73PKC	87440-506-11	2	7269.5	0	0.0	0	0.0	0.0	2	4.0	1.0
70	73PKL	8744050621	25	581.6	2	32.5	1	46.0	1.3	22	7.7	16.2
70	73PKD	87470-505-1	16	908.7	0	0.0	0	0.0	0.0	16	4.3	11.4
70	73PKP	874705061	1	14539.0	0	0.0	0	0.0	0.0	1	2.0	1.0
70	73PKD	874705061	1	14539.0	0	0.0	0	0.0	0.0	1	2.0	0.3
70	73PKC	87480-505-1	2	7269.5	0	0.0	0	0.0	0.0	2	1.5	1.0
90	73PMJ	00-506-1	1	14539.0	0	0.0	0	0.0	0.0	1	8.0	2.0
90	73PMC	1879105051	2	7269.5	0	0.0	0	0.0	0.0	2	6.5	1.3
90	73PMF	474-0036-006	4	3634.7	0	0.0	0	0.0	0.0	4	15.5	3.1
90	73PMG	474-0036-007	2	7269.5	0	0.0	0	0.0	0.0	2	0.7	0.6
90	73PMH	4740035005	1	14539.0	0	0.0	0	0.0	0.0	1	3.0	1.0
90	73PMC	47910-505-41	1	14539.0	0	0.0	0	0.0	0.0	1	12.0	0.5
90	73PME	584188025-500-5	1	14539.0	0	0.0	0	0.0	0.0	1	2.0	1.0
90	73PMB	65890-506-11	10	1453.9	0	0.0	2	149.0	1.3	8	2.0	5.9
90	73PMA	87075-505-1	1	14539.0	0	0.0	0	0.0	0.0	1	2.0	2.0
90	73PMC	871050641	3	4846.3	0	0.0	0	0.0	0.0	3	0.3	1.5
90	73PMA	87850-506-1	1	14539.0	0	0.0	0	0.0	0.0	1	1.0	0.3
90	73PMC	87850-505-41	1	14539.0	0	0.0	0	0.0	0.0	1	2.0	1.0
90	73PME	87650-505-5	1	14539.0	0	0.0	0	0.0	0.0	1	2.0	1.0
90	73PMD	87850-506-51	1	14539.0	0	0.0	1	4.0	2.4	0	0.0	4.8
90	73PMA	87850-50551	1	14539.0	0	0.0	0	0.0	0.0	1	1.0	0.5
90	73PME	8785050651	1	14539.0	0	0.0	0	0.0	0.0	1	2.0	0.3
90	73PMA	8787550621	63	230.8	0	0.0	0	0.0	0.0	63	22.6	33.6
90	73PMD	87880-505-21	2	7269.5	0	0.0	0	0.0	0.0	2	1.0	1.0
90	73PMJ	87910-506-1	22	660.9	3	8.0	2	519.5	0.7	17	44.5	23.3
90	73PMC	8791050641	41	354.6	2	6.5	0	0.0	0.0	39	4.4	45.3
90	73PME	88025-505-51	70	207.7	3	226.3	19	208.2	0.7	48	56.3	43.9
90	73PMA	98025-506-51	3	4846.3	0	0.0	0	0.0	0.0	3	21.0	1.5
90	73PME	98025-505-51	12	1211.6	0	0.0	0	0.0	0.0	12	2.7	8.3
90	73PMA	88025-505-51	3	4846.3	0	0.0	0	0.0	0.0	3	1.7	3.0
90	73PME	88205-506-51	49	296.7	0	0.0	0	0.0	0.0	49	7.4	55.6
100	73PPQ	F9400-505-41	1	14539.0	0	0.0	1	4.0	2.7	0	0.0	5.5
100	73PPB	326-105620-5	4	3634.7	0	0.0	0	0.0	0.0	4	7.0	2.0
100	73PPD	326-105811-10	1	14539.0	0	0.0	1	71.0	6.0	0	0.0	6.0
100	73PPC	342-10561-2	16	906.7	0	0.0	5	44.6	0.7	11	117.5	11.3
100	73PPE	342-105833-8	1	14539.0	0	0.0	1	1275.0	0.7	0	0.0	0.7
100	73PPA	342-105200-1	1	14539.0	0	0.0	0	0.0	0.0	1	1.0	0.5
100	73PPD	342-106215-1	5	2907.8	0	0.0	2	24.5	0.7	3	4.7	2.9
100	73PPC	342-106216-1	1	14539.0	0	0.0	1	68.0	0.7	0	0.0	0.7
100	73PPD	342-105215-1	1	14539.0	0	0.0	0	0.0	0.0	1	3.0	0.3
100	73PPC	342-106216-1	2	7269.5	0	0.0	2	44.5	0.7	0	0.0	1.3
100	73PPD	342-105216-1E	12	1211.6	0	0.0	1	85.0	0.7	11	7.3	7.3
100	73PPB	342-105215-10	1	14539.0	0	0.0	0	0.0	0.0	1	4.0	0.3
100	73PPD	342-1062151	1	14539.0	0	0.0	0	0.0	0.0	1	12.0	1.5

LRU	WUC	PART NUMBER	NUMBER OF SHOP DEMANDS	MEAN TIME BETWEEN DEMANDS	NUMBER SHOP NO FAULT	MEAN TURN AROUND TIME NO FAULT	NUMBER SHOP REPAIRS	MEAN TURN AROUND TIME (DAYS)	MEAN TIME TO REPAIR (HRS)	NUMBER NRTS	MEAN TURN AROUND TIME (DAYS)	SHOP MAINTENANCE MAN HOURS
100	73PPC	342105601-2	1	14539.0	0	0.0	0	0.0	0.0	1	1.0	0.5
100	73PPD	3421062161H	4	3634.7	0	0.0	0	0.0	0.0	4	6.0	1.0
110	73PQD	6670050631	1	14539.0	0	0.0	1	2.0	3.5	0	0.0	3.5
999	73PEF	3561-39300	1	14539.0	0	0.0	0	0.0	0.0	1	0.5	0.3
			2747	5.3	194	52.0	558	85.9	2.3	1995	35.2	3937.7

NRTS RATE (%)-------------------: 72.6

MEAN TIME BETWEEN REPAIR (MTBR)-: 5.7

XNRTS2 = 1.0

STRIKE CAMERA
ORGANIZATIONAL LEVEL
MAINTAINABILITY SUMMARY

03/09/79

LOCATION: SUMMARY
FLIGHT HOURS: 14539.0

TIME FRAME: SUM
END OF MONTH AIRCRAFT INVENTORY: 77 SORTIES: 6037

LRU	FLIGHT LINE MAINT	MEAN TIME BETWEEN MAINT (FH)	NUMBER CND ACTIONS	CND AS % OF LINE MAINT	MEAN MAINT TIME CND (HRS)	NUMBER CANNIB ACTIONS	CANN AS % OF LINE MAINT	MEAN MAINT TIME CANN (HRS)	NUMBER REPAIR IN PLACE ACTIONS	MEAN MAINT TIME RIPS (HRS)	NUMBER REMOVAL (DEMAND) ACTIONS	MEAN MAINT TIME REMOVL (HRS)	NUMBER OTHER ACTIONS	MEAN MAINT TIME OTHER (HRS)	LINE MAINT MAN HOURS
10	190	76.5	2	1.1	1.0	0	0.0	0.0	11	1.4	201	1.1	59	1.6	335.6
999	29	501.3	8	27.6	1.7	0	0.0	0.0	5	3.5	0	0.0	23	0.9	52.8
	219	66.4	10	4.6	1.6	0	0.0	0.0	16	2.0	201	1.1	82	1.4	388.3

CND RATE (% OF SORTIES)--------: 0.2

MEAN TIME BETWEEN DEMANDS------: 72.3

SORTY SUCCESS RATE (%)---------: 100.0

WHNCDP = 3.0

STRIKE CAMERA
INTERMEDIATE LEVEL
LRU MAINTAINABILITY SUMMARY

03/09/79

LOCATION: SUMMARY
FLIGHT HOURS: 14539.0

TIME FRAME: SUM
END OF MONTH AIRCRAFT INVENTORY: 77 SORTIES: 6037

LRU	WUC	NUMBER OF SHOP ARRIVALS	MEAN TIME BETWEEN ARRIVALS	NUMBER SHOP NO FAULTS	PERCENT OF NO FAULT ARRIVALS	MEAN TURN AROUND TIME (DAYS)	NUMBER SHOP REPAIRS	MEAN TURN AROUND REPAIR (DAYS)	MEAN TIME TO REPAIR (HRS)	NUMBER NRTS	MEAN TURN AROUND NRTS (DAYS)	SHOP MAINTENANCE MAN HOURS
10	77AA0	1	14539.0	0	0.0	0.0	1	5.0	0.5	0	0.0	0.5
		1	14538.9	0	0.0	0.0	1	5.0	0.5	0	0.0	0.5

NRTS RATE (%)-------------------: 0.0

MEAN TIME BETWEEN REPAIR (MTBR)-: 14539.0

MEAN TURN AROUND TIME (MTAT)----: 5.0

CONFIRMED FAILURES PER FLIGHT---: 0.000

XNRTS2 = 0.0

STRIKE CAMERA
INTERMEDIATE LEVEL
SRU MAINTAINABILITY SUMMARY

03/09/79

LOCATION: SUMMARY
FLIGHT HOURS: 14539.0

TIME FRAME: SUM
END OF MONTH AIRCRAFT INVENTORY: 77

SORTIES: 6037

LRU	WUC	PART NUMBER	NUMBER OF SHOP DEMANDS	MEAN TIME BETWEEN DEMANDS	NUMBER SHOP NO FAULT	MEAN TURN AROUND TIME NO FAULT	NUMBER SHOP REPAIRS	MEAN TURN AROUND TIME (DAYS)	MEAN TIME TO REPAIR (HRS)	NUMBER NRTS	MEAN TURN AROUND TIME (DAYS)	SHOP MAINTENANCE MAN HOURS
10	77AAE	119C500	1	14539.0	0	0.0	1	4.0	1.5	0	0.0	3.0
10	77AAA	1190B88	1	14539.0	0	0.0	1	2.0	3.5	0	0.0	3.5
10	77AAB	1193B62	8	1817.4	0	0.0	0	0.0	0.0	8	3.2	6.5
10	77AAA	1193B88	53	274.3	7	4.6	46	86.3	1.7	0	0.0	132.7
10	77AA4	1193B88	2	7269.5	0	0.0	2	4.5	1.5	0	0.0	3.0
10	77AAA	1193B88	73	199.2	4	5.7	69	3.5	1.5	0	0.0	151.7
10	77AAD	1193B88	1	14539.0	0	0.0	1	22.0	0.5	0	0.0	1.0
10	77AAA	1193B88	25	581.6	0	0.0	25	3.0	1.3	0	0.0	35.0
10	77AAB	1193B88	1	14539.0	0	0.0	1	14.0	0.5	0	0.0	0.5
10	77AAA	1193B88	13	1118.4	0	0.0	13	4.0	1.2	0	0.0	20.5
10	77AAD	1193B88	1	14539.0	0	0.0	1	1.0	0.5	0	0.0	0.5
10	77AAA	1193B88	13	1118.4	1	6.0	12	2.8	1.5	0	0.0	22.0
10	77AAD	1193C50	5	2907.8	0	0.0	5	275.3	0.5	0	0.0	4.0
10	77AAE	1193C50	3	4846.3	0	0.0	3	2.0	1.0	0	0.0	3.0
10	77AAD	1193C50	56	259.6	2	3.5	54	23.9	0.8	0	0.0	56.3
10	77AAE	1193C50	1	14539.0	0	0.0	1	4.0	1.2	0	0.0	2.5
10	77AAD	1193C50	34	427.6	0	0.0	34	1.3	0.5	0	0.0	23.7
10	77AAE	1193C50	1	14539.0	0	0.0	1	1.0	1.5	0	0.0	1.5
10	77AAD	1193C50	41	354.6	0	0.0	41	3.6	0.6	0	0.0	26.5
10	77AAA	1193C50	1	14539.0	0	0.0	1	0.5	1.0	0	0.0	2.0
10	77AAD	1193C500	14	1038.5	0	0.0	14	2.5	0.6	0	0.0	9.0
10	77AAA	1193C88	1	14539.0	0	0.0	1	1.0	1.0	0	0.0	1.0
10	77AAG	1193D4	12	1211.6	2	7.0	0	0.0	0.0	10	7.6	39.5
10	77AAK	1193D5	3	4846.3	1	8.0	0	0.0	0.0	2	7.0	4.0
10	77AAE	1193D50	11	1321.7	1	2.0	10	6.4	4.1	0	0.0	75.0
10	77AAF	1193D50	1	14539.0	0	0.0	1	5.0	1.0	0	0.0	2.0
10	77AAE	1193D50	10	1453.9	1	1.0	9	2.3	1.5	0	0.0	26.5
10	77AAD	1193D50	1	14539.0	0	0.0	1	8.0	0.5	0	0.0	0.5
10	77AAE	1193D50	51	285.1	3	14.5	47	4.1	2.1	1	5.0	191.7
10	77AAA	1193D50	1	14539.0	0	0.0	1	1.0	1.0	0	0.0	1.0
10	77AAE	1193D50	3	4846.3	0	0.0	3	0.7	1.1	0	0.0	3.8
10	77AAH	1193D6	2	7269.5	0	0.0	1	19.0	2.0	1	14.0	3.0
10	77AAA	1193D88	2	7269.5	0	0.0	2	7.0	1.5	0	0.0	4.5
10	77AAG	119304	1	14539.0	0	0.0	0	0.0	0.0	1	19.0	4.0
10	77AAK	119305	1	14539.0	0	0.0	0	0.0	0.0	1	5.0	4.0
10	77AAE	1193050	2	7269.5	0	0.0	2	1.2	1.0	0	0.0	3.0
10	77AAA	1193388	1	14539.0	0	0.0	1	2.0	1.5	0	0.0	1.5
10	77AAD	1193650	3	4846.3	0	0.0	3	2.7	0.7	0	0.0	3.0

03/09/79

LRU	WUC	PART NUMBER	NUMBER OF SHOP DEMANDS	MEAN TIME BETWEEN DEMANDS	NUMBER SHOP NO FAULT	MEAN TURN AROUND TIME NO FAULT	NUMBER SHOP REPAIRS	MEAN TURN AROUND TIME (DAYS)	MEAN TIME TO REPAIR (HRS)	NUMBER NRTS	MEAN TURN AROUND TIME (DAYS)	SHOP MAINTENANCE MAN HOURS
10	77AAA	119388	1	14539.0	0	0.0	1	1.0	1.5	0	0.0	3.0
10	77AAD	1196C50	1	14539.0	0	0.0	1	0.5	1.0	0	0.0	1.0
10	77AAA	1198888	3	4846.3	0	0.0	3	0.3	1.5	0	0.0	4.5
10	77AAF	12E42200801	20	726.9	6	1.2	13	10.7	2.7	1	78.0	58.7
10	77AAD	1993C50	3	4846.3	0	0.0	3	2.2	1.0	0	0.0	3.0
10	77AAE	1993D50	0	0.0	0	0.0	0	0.0	0.0	0	0.0	0.0
10	77AAA	93888	4	3634.7	0	0.0	4	8.2	1.0	0	0.0	7.0
			486	29.9	28	5.1	433	18.2	1.4	25	9.5	953.5

NRTS RATE (%)------------------: 5.1

MEAN TIME BETWEEN REPAIR (MTBR)-: 31.7

XNRTS2 = 0.0

SECTION II

RELIABILITY ANALYSIS

AN/APG-63

DRCD STUDY FIELD DATA ANALYSIS SUMMARY

WEAPON SYSTEM B OP CMND TAC
EQ NO 05 QPA=1 EH/FH=2.61
EQ FUNCTION RADAR FC
EQ IDENT WUC 74F00 LRU 00 EQ DESCR: RADAR SYS

DATA WINDOW - 12 MONTHS
PERIOD ENDING - SEP78

DATE PROCESSED 02/17/79

MONTH YR	WS INV	OP TIME FLT HRS	TOTAL FAILS	TOTAL MA	MTBF EQ HRS	MTBMA EQ HRS	3 MO EMTBF	3 MO EMTBMA	% FAILS	% SH REPS	% NRTS	MAINT INDEX	ABORTS	CONDS	MTBF FL HRS
78SEP	271	6320	17	343	970.3	48.1	879.1	49.4	5	2	0	.27	0	0	371.8
78AUG	298	7047	21	334	875.8	55.1	920.4	53.1	6	0	0	.22	0	0	335.6
78JUL	253	5158	17	301	791.9	44.7	878.2	49.0	6	3	0	.34	0	0	303.4
78JUN	265	6486	15	284	1128.6	59.6	801.2	46.8	5	2	0	.26	0	0	432.4
78MAY	280	5852	20	347	763.7	44.0	785.8	43.4	6	3	0	.29	0	0	292.6
78APR	267	5159	22	344	612.0	39.1	868.3	42.1	6	0	0	.34	0	0	234.5
78MAR	272	5549	13	305	1114.1	47.5	1370.9	44.9	4	0	0	.33	0	0	426.8
78FEB	258	4262	10	279	1112.4	39.9	1869.8	44.3	4	0	0	.43	0	0	426.2
78JAN	257	4371	4	241	2852.1	47.3	1721.5	49.9	2	0	0	.27	0	0	1092.8
77DEC	243	4262	4	239	2781.0	46.5	1262.2	49.7	2	3	0	.25	0	0	1065.5
77NOV	235	5218	13	245	1047.6	55.6	1130.8	48.3	5	0	0	.21	0	0	401.4
77OCT	135	4061	11	227	963.6	46.7	1605.8	46.9	5	10	0	.40	0	0	369.2
TOTAL	253	63745	167	3489	996.3	47.7			5	2	0	.30	0	0	381.7

AN/APG-63

DRCD STUDY FIELD DATA ANALYSIS SUMMARY

WEAPON SYSTEM B OP CMND TAC
EQ NO 05 QPA=1 EH/FH=2.61
EQ FUNCTION RADAR FC
EQ IDENT WUC 74FA0 LRU 11 EQ DESCR: XMTR

DATA WINDOW - 12 MONTHS
PERIOD ENDING - SEP78

DATE PROCESSED 02/17/79

MONTH YR	WS INV	OP TIME FLT HRS	TOTAL FAILS	TOTAL MA	MTBF EQ HRS	MTBMA EQ HRS	3 MO EMTBF	3 MO EMTBMA	% FAILS	% SH REPS	% NRTS	MAINT INDEX	ABORTS	CONDS	MTBF FL HRS
78SEP	271	6320	54	71	305.5	232.3	322.3	225.9	76	85	0	.27	0	0	117.0
78AUG	298	7047	47	64	391.3	287.4	301.1	188.4	73	63	9	.23	0	0	149.9
78JUL	253	5158	49	79	274.7	170.4	280.2	158.6	62	84	1	.35	0	0	105.3
78JUN	265	6486	66	116	256.5	145.9	273.5	161.9	57	59	6	.33	0	0	98.3
78MAY	280	5852	48	93	318.2	164.2	271.8	167.5	52	67	9	.38	0	0	121.9
78APR	267	5159	53	73	254.1	184.5	247.3	136.1	73	59	5	.33	0	0	97.3
78MAR	272	5549	58	92	249.7	157.4	280.4	131.3	63	62	5	.36	1	0	95.7
78FEB	258	4262	47	122	236.7	91.2	282.8	126.1	39	43	4	.48	0	0	90.7
78JAN	257	4371	27	68	422.5	167.8	298.8	172.1	40	60	6	.29	0	0	161.9
77DEC	243	4262	45	77	247.2	144.5	231.0	159.9	58	70	5	.42	0	0	94.7
77NOV	235	5219	49	65	277.9	209.5	223.2	166.3	75	72	11	.36	1	0	106.5
77OCT	135	4061	59	79	179.6	134.2	234.4	171.7	75	73	4	.65	0	0	68.8
TOTAL	253	63745	602	999	276.4	166.5			60	65	5	.36	2	0	105.9

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DRCD STUDY FIELD DATA ANALYSIS SUMMARY

WEAPON SYSTEM B   OP CMND TAC   DATA WINDOW - 12 MONTHS   PAGE 2
EQ NO 05   QPA=1   EH/FH=2.61   PERIOD ENDING - SEP78
EQ FUNCTION   RADAR FC
EQ IDENT WUC 74FC0   LRU 12   EQ DESCR: RECVR   DATE PROCESSED 02/17/79

MONTH YR	WS INV	OP TIME FLT HRS	TOTAL FAILS	TOTAL MA	MTBF EQ HRS	MTBMA EQ HRS	3 MO EMTBF	3 MO EMTBMA	% FAILS	% SH REPS	% NRTS	MAINT INDEX	ABORTS	CONDS	MTBF FL HRS
78SEP	271	6320	47	65	351.0	253.8	493.4	308.0	72	60	6	.32	1	0	134.5
78AUG	298	7047	27	48	681.2	383.2	554.4	343.5	56	58	4	.23	0	0	261.0
78JUL	253	5158	24	44	560.9	306.0	456.6	306.5	55	57	7	.29	0	0	214.9
78JUN	265	6486	37	50	457.5	338.6	439.1	317.1	74	60	6	.22	0	0	175.3
78MAY	280	5852	39	55	391.6	277.7	372.6	270.1	71	69	4	.24	0	0	150.1
78APR	267	5159	28	39	480.9	345.3	325.6	236.8	72	110	15	.34	0	0	184.3
78MAR	272	5549	49	66	295.6	219.4	333.5	232.8	74	77	12	.52	0	0	113.2
78FEB	258	4262	43	60	258.7	185.4	343.4	242.1	72	33	13	.44	0	0	99.1
78JAN	257	4371	19	33	600.4	345.7	406.2	293.9	58	79	42	.35	0	0	230.1
77DEC	243	4262	36	46	309.0	241.8	330.3	265.7	78	43	28	.39	0	0	118.4
77NOV	235	5218	34	44	400.6	309.5	399.1	314.1	77	39	14	.26	0	0	153.5
77OCT	135	4061	37	43	286.5	246.5	396.5	300.1	86	79	19	.46	0	0	109.8
TOTAL	253	63745	420	593	396.1	280.6			71	63	13	.33	1	0	151.8

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DRCD STUDY FIELD DATA ANALYSIS SUMMARY

WEAPON SYSTEM B   OP CMND TAC   DATA WINDOW - 12 MONTHS
EQ NO 05   QPA=1   EH/FH=2.61   PERIOD ENDING - SEP78
EQ FUNCTION   RADAR FC
EQ IDENT WUC 74FF0   LRU 13   EQ DESCR: RAD TGT PROC   DATE PROCESSED 02/17/79

MONTH YR	WS INV	OP TIME FLT HRS	TOTAL FAILS	TOTAL MA	MTBF EQ HRS	MTBMA EQ HRS	3 MO EMTBF	3 MO EMTBMA	% FAILS	% SH REPS	% NRTS	MAINT INDEX	ABORTS	CONDS	MTBF FL HRS
78SEP	271	6320	42	56	392.7	294.6	619.9	363.5	75	64	5	.18	0	0	150.5
78AUG	298	7047	16	38	1149.5	484.0	774.3	413.4	42	21	13	.08	0	0	440.4
78JUL	253	5158	20	39	673.1	345.2	570.8	321.6	51	54	10	.14	0	0	257.9
78JUN	265	6486	27	41	627.0	412.9	485.8	304.4	66	37	7	.08	0	0	240.2
78MAY	280	5852	33	62	462.8	246.4	419.6	258.8	53	34	8	.16	0	0	177.3
78APR	267	5159	34	47	396.0	286.5	383.1	238.2	72	38	13	.15	1	0	151.7
78MAR	272	5549	36	58	402.3	249.7	393.8	210.3	62	40	5	.14	0	0	154.1
78FEB	258	4262	32	59	347.6	188.5	361.9	172.6	54	36	8	.22	0	0	133.2
78JAN	257	4371	26	59	438.8	193.4	354.4	188.3	44	14	2	.12	0	0	168.1
77DEC	243	4262	35	77	317.8	144.5	312.8	186.0	45	29	4	.14	0	0	121.8
77NOV	235	5218	41	56	332.2	243.2	314.1	229.2	73	36	12	.11	1	0	127.3
77OCT	135	4061	37	57	286.5	186.0	286.8	223.0	65	39	11	.19	0	0	109.8
TOTAL	253	63745	379	649	439.0	256.4			58	36	8	.14	2	0	168.2

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DRCD STUDY FIELD DATA ANALYSIS SUMMARY

WEAPON SYSTEM B OP CMND TAC   DATA WINDOW - 12 MONTHS   PAGE 3
EQ NO 05 QPA=1 EH/FH=2.61   PERIOD ENDING - SEP78
EQ FUNCTION RADAR FC
EQ IDENT WUC 74FH0 LRU 14 EQ DESCR: POW SUPPLY   DATE PROCESSED 02/17/79

MONTH YR	WS INV	OP TIME FLT HRS	TOTAL FAILS	TOTAL MA	MTBF EQ HRS	MTBMA EQ HRS	3 MO EMTBF	3 MO EMTBMA	% FAILS	% SH REPS	% NRTS	MAINT INDEX	ABORTS	CONDS	MTBF FL HRS
78SEP	271	6320	40	58	412.4	284.4	478.7	279.5	69	57	12	.15	0	0	158.0
78AUG	298	7047	30	58	613.1	317.1	431.7	223.8	52	62	12	.15	0	0	234.9
78JUL	253	5158	31	57	434.3	236.2	368.3	175.6	54	84	12	.19	0	0	166.4
78JUN	265	6486	52	103	325.5	164.4	393.7	192.7	50	32	12	.17	1	0	124.7
78MAY	290	5852	41	100	372.5	152.7	496.8	198.3	41	31	10	.17	1	0	142.7
78APR	267	5159	23	34	585.4	396.0	550.3	181.7	68	44	3	.12	0	0	224.3
78MAR	272	5549	23	84	629.7	172.4	514.1	154.2	27	36	1	.18	0	0	241.3
78FEB	258	4262	25	97	445.0	114.7	454.8	166.6	26	37	5	.24	0	0	170.5
78JAN	257	4371	24	59	475.3	193.4	475.7	258.2	41	29	7	.17	0	0	182.1
77DEC	243	4262	25	46	445.0	241.8	397.1	282.7	54	46	2	.15	1	0	170.5
77NOV	235	5218	27	35	504.4	389.1	389.9	297.6	77	60	14	.11	0	0	193.3
77OCT	135	4061	37	44	286.5	240.9	369.1	265.4	84	55	14	.21	0	0	109.8
TOTAL	253	63745	378	775	440.1	214.7			49	45	9	.17	3	0	168.6

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DRCD STUDY FIELD DATA ANALYSIS SUMMARY

WEAPON SYSTEM B OP CMND TAC   DATA WINDOW - 12 MONTHS
EQ NO 05 QPA=1 EH/FH=2.61   PERIOD ENDING - SEP78
EQ FUNCTION RADAR FC
EQ IDENT WUC 74FJ0 LRU 15 EQ DESCR: RF OSC   DATE PROCESSED 02/17/79

MONTH YR	WS INV	OP TIME FLT HRS	TOTAL FAILS	TOTAL MA	MTBF EQ HRS	MTBMA EQ HRS	3 MO EMTBF	3 MO EMTBMA	% FAILS	% SH REPS	% NRTS	MAINT INDEX	ABORTS	CONDS	MTBF FL HRS
78SEP	271	6320	13	15	1268.9	1099.7	1151.2	681.0	87	93	20	.07	0	0	486.2
78AUG	298	7047	18	31	1021.8	593.3	1189.8	668.3	58	35	6	.08	1	0	391.5
78JUL	253	5158	11	25	1223.9	538.5	878.2	617.1	44	56	0	.12	0	0	468.9
78JUN	265	6486	12	17	1410.7	995.8	845.7	671.6	71	129	6	.09	0	0	540.5
78MAY	280	5852	29	32	526.7	477.3	785.8	608.8	91	50	6	.13	1	0	201.8
78APR	267	5159	13	19	1035.8	708.7	908.6	630.2	68	63	5	.11	0	0	396.8
78MAR	272	5549	13	20	1114.1	724.1	804.7	597.0	65	75	15	.09	0	0	426.8
78FEB	258	4262	17	23	654.3	483.6	764.9	601.0	74	43	13	.09	0	0	250.7
78JAN	257	4371	16	19	713.0	600.4	840.7	695.2	84	68	5	.11	0	0	273.2
77DEC	243	4262	11	14	1011.3	794.6	803.2	642.6	79	79	36	.07	0	0	387.5
77NOV	235	5218	16	19	851.2	716.8	721.8	584.9	84	47	5	.10	0	0	326.1
77OCT	135	4061	17	22	623.5	481.8	729.9	519.0	77	100	9	.22	0	0	238.9
TOTAL	253	63745	186	256	894.5	649.9			73	66	9	.10	2	0	342.7

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DRCD STUDY FIELD DATA ANALYSIS SUMMARY

WEAPON SYSTEM B   OP CMND TAC   DATA WINDOW - 12 MONTHS   PAGE 4
EQ NO 05   QPA=1   EH/FH=2.61   PERIOD ENDING - SEP78
EQ FUNCTION   RADAR FC
EQ IDENT WUC 74FK0   LRU 16   EQ DESCR: CONTROL   DATE PROCESSED 02/17/79

MONTH YR	WS INV	OP TIME FLT HRS	TOTAL FAILS	TOTAL MA	MTBF EQ HRS	MTBMA EQ HRS	3 MO EMTBF	3 MO EMTBMA	% FAILS	% SH REPS	% NRTS	MAINT INDEX	ABORTS	CONDS	MTBF FL HRS
78SEP	271	6320	3	7	5498.4	2356.5	4395.5	1208.8	43	29	471	.01	0	0	2106.7
78AUG	298	7047	6	18	3065.4	1021.8	4434.9	1189.8	33	0	11	.01	0	0	1174.5
78JUL	253	5158	2	15	6731.2	897.5	4566.5	1343.1	13	7	7	.01	0	0	2579.0
78JUN	265	6486	3	8	5642.8	2116.1	4566.7	1574.7	38	50	0	.01	0	0	2162.0
78MAY	280	5852	5	11	3054.7	1388.5	3929.2	1490.4	45	36	9	.00	0	0	1170.4
78APR	267	5159	2	10	6732.5	1346.5	4884.0	1447.1	20	0	0	.01	0	0	2579.5
78MAR	272	5549	4	8	3620.7	1810.4	4626.9	1850.8	50	38	0	.02	0	0	1387.3
78FEB	258	4262	2	9	5561.9	1236.0	8414.0	1771.4	22	44	11	.02	0	0	2131.0
78JAN	257	4371	2	3	5704.2	3802.8	9037.8	2410.1	67	0	0	.00	0	0	2185.5
77DEC	243	4262	0	7		1589.1	8835.5	2078.9	0	0	0	.01	0	0	
77NOV	235	5218	2	5	6809.5	2723.8	4846.4	1995.6	40	40	20	.01	0	0	2609.0
77OCT	135	4061	2	5	5299.6	2119.8	2294.0	1284.6	40	0	0	.01	0	0	2030.5
TOTAL	253	63745	33	106	5041.6	1569.6			31	19	37	.01	0	0	1931.7

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DRCD STUDY FIELD DATA ANALYSIS SUMMARY

WEAPON SYSTEM B   OP CMND TAC   DATA WINDOW - 12 MONTHS
EQ NO 05   QPA=1   EH/FH=2.61   PERIOD ENDING - SEP78
EQ FUNCTION   RADAR FC
EQ IDENT WUC 74FPX   LRU 07   EQ DESCR: WGUIDE COMPS   DATE PROCESSED 02/17/79

MONTH YR	WS INV	OP TIME FLT HRS	TOTAL FAILS	TOTAL MA	MTBF EQ HRS	MTBMA EQ HRS	3 MO EMTBF	3 MO EMTBMA	% FAILS	% SH REPS	% NRTS	MAINT INDEX	ABORTS	CONDS	MTBF FL HRS
78SEP	271	6320	0	3		5498.4	8058.4	4029.2	0	0	0	.00	0	0	
78AUG	298	7047	0	1		18392.7	8130.6	4878.4	0	0	0	.00	0	0	
78JUL	253	5158	6	8	2243.7	1682.8	5708.1	2536.9	75	0	0	.00	0	0	859.7
78JUN	265	6486	0	1		16928.5	5708.4	2686.3	0	0	0	.00	0	0	
78MAY	280	5852	2	9	7636.9	1697.1	4802.4	1879.2	22	0	0	.00	0	0	2926.0
78APR	267	5159	6	7	2244.2	1923.6	3552.0	2056.4	86	0	0	.01	0	0	859.8
78MAR	272	5549	1	7	14482.9	2069.0	6169.2	2643.9	14	0	0	.00	0	0	5549.0
78FEB	258	4262	4	5	2781.0	2224.8	6731.2	4808.0	80	0	0	.00	0	0	1065.5
78JAN	257	4371	1	2	11408.3	5704.2	12050.4	6025.2	50	0	0	.00	0	0	4371.0
77DEC	243	4262	0	0			11780.7	7068.4				.00	0	0	
77NOV	235	5218	2	4	6809.5	3404.7	11308.3	6785.0	50	0	0	.00	0	0	2609.0
77OCT	135	4061	1	1	10599.2	10599.2	16058.0	16058.0	100	0	0	.00	0	0	4061.0
TOTAL	253	63745	23	48	7233.7	3466.1			48	0	0	.00	0	0	2771.5

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DRCD STUDY FIELD DATA ANALYSIS SUMMARY

WEAPON SYSTEM B   OP CMND TAC   DATA WINDOW - 12 MONTHS   PAGE 5
EQ NO 05   QPA=1   EH/FH=2.61   PERIOD ENDING - SEP78
EQ FUNCTION RADAR FC
EQ IDENT WUC 74FQ0   LRU 18   EQ DESCR: R DATA PROC   DATE PROCESSED 02/17/79

MONTH YR	WS INV	OP TIME FLT HRS	TOTAL FAILS	TOTAL MA	MTBF EQ HRS	MTBMA EQ HRS	3 MO EMTBF	3 MO EMTBMA	% FAILS	% SH REPS	% NRTS	MAINT INDEX	ABORTS	CONDS	MTBF FL HRS
78SEP	271	6320	46	71	358.6	232.3	393.1	204.0	65	75	14	.24	0	0	137.4
78AUG	298	7047	43	77	427.7	238.9	366.8	151.5	56	51	14	.20	0	0	163.9
78JUL	253	5158	34	89	396.0	151.3	338.3	129.7	38	47	18	.32	0	0	151.7
78JUN	265	6486	56	156	302.3	108.5	343.4	134.3	36	31	10	.26	0	0	115.8
78MAY	280	5852	45	107	339.4	142.7	357.2	141.2	42	53	8	.27	1	0	130.0
78APR	267	5159	32	77	420.8	174.9	325.6	116.3	42	44	18	.25	0	0	161.2
78MAR	272	5549	44	122	329.2	118.7	300.9	106.4	36	34	11	.31	1	0	126.1
78FEB	258	4262	44	137	252.8	81.2	297.8	116.1	32	31	9	.49	0	0	96.9
78JAN	257	4371	35	89	326.0	128.2	331.7	158.6	39	36	11	.30	1	0	124.9
77DEC	243	4262	34	64	327.2	173.8	276.1	164.4	53	44	14	.26	1	0	125.4
77NOV	235	5218	40	75	340.5	181.6	249.4	155.6	53	55	17	.27	1	0	130.4
77OCT	135	4061	54	76	196.3	139.5	209.9	135.5	71	58	13	.34	0	0	75.2
TOTAL	253	63745	507	1140	328.2	145.9			44	44	13	.28	5	0	125.7

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DRCD STUDY FIELD DATA ANALYSIS SUMMARY

WEAPON SYSTEM B   OP CMND TAC   DATA WINDOW - 12 MONTHS
EQ NO 05   QPA=1   EH/FH=2.61   PERIOD ENDING - SEP78
EQ FUNCTION RADAR FC
EQ IDENT WUC 74FS0   LRU 19   EQ DESCR: TGT PROC AN   DATE PROCESSED 02/17/79

MONTH YR	WS INV	OP TIME FLT HRS	TOTAL FAILS	TOTAL MA	MTBF EQ HRS	MTBMA EQ HRS	3 MO EMTBF	3 MO EMTBMA	% FAILS	% SH REPS	% NRTS	MAINT INDEX	ABORTS	CONDS	MTBF FL HRS
78SEP	271	6320	50	65	329.9	253.8	335.8	229.1	77	58	15	.32	0	0	126.4
78AUG	298	7047	52	82	353.7	224.3	399.9	254.1	63	48	23	.32	0	0	135.5
78JUL	253	5158	42	64	320.5	210.3	443.3	294.6	66	55	23	.52	0	0	122.8
78JUN	265	6486	28	46	604.6	368.0	466.0	340.8	61	54	24	.21	0	0	231.6
78MAY	280	5852	33	45	462.8	339.4	432.2	315.5	73	69	16	.26	0	0	177.3
78APR	267	5159	37	43	363.9	313.1	407.0	302.9	86	77	33	.38	0	0	139.4
78MAR	272	5549	30	49	482.8	295.6	435.5	313.7	61	51	16	.31	0	0	185.0
78FEB	258	4262	29	37	383.6	300.6	386.8	297.8	78	62	16	.29	0	0	147.0
78JAN	257	4371	26	32	438.8	356.5	368.9	280.2	81	50	9	.26	0	0	168.1
77DEC	243	4262	32	44	347.6	252.8	299.5	234.1	73	70	25	.30	0	0	133.2
77NOV	235	5218	40	53	340.5	257.0	295.0	234.0	75	40	47	.31	0	0	130.4
77OCT	135	4061	46	54	230.4	196.3	274.5	226.2	85	69	9	.39	0	0	88.3
TOTAL	253	63745	445	614	373.9	271.0			72	58	22	.32	0	0	143.2

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AN/APG-63

DRCD STUDY FIELD DATA ANALYSIS SUMMARY

WEAPON SYSTEM B OP CMND TAC
EQ NO 05 QPA=1 EH/FH=2.61
EQ FUNCTION RADAR FC
EQ IDENT WUC 74FU0 LRU 20 EQ DESCR: ANT UNIT

DATA WINDOW - 12 MONTHS
PERIOD ENDING - SEP78

DATE PROCESSED 02/17/79

MONTH YR	WS INV	OP TIME FLT HRS	TOTAL FAILS	TOTAL MA	MTBF EQ HRS	MTBMA EQ HRS	3 MO EMTBF	3 MO EMTBMA	% FAILS	% SH REPS	% NRTS	MAINT INDEX	ABORTS	CONDS	MTBF FL HRS
78SEP	271	6320	46	56	358.6	294.6	366.3	161.2	82	86	11	.33	1	0	137.4
78AUG	298	7047	41	67	448.6	274.5	372.4	154.9	61	72	3	.30	0	0	171.9
78JUL	253	5158	45	177	299.2	76.1	317.1	144.1	25	33	3	.57	2	0	114.6
78JUN	265	6486	45	71	376.2	238.4	312.8	227.2	63	58	13	.33	0	0	144.1
78MAY	280	5852	54	69	282.8	221.4	357.2	284.4	78	72	3	.39	2	0	108.4
78APR	267	5159	47	61	286.5	220.7	434.1	352.0	77	69	8	.45	0	0	109.8
78MAR	272	5549	20	22	724.1	658.3	587.5	514.1	91	123	18	.23	1	0	277.4
78FEB	258	4262	23	28	483.6	397.3	502.3	410.4	82	93	14	.34	2	0	185.3
78JAN	257	4371	20	22	570.4	518.6	523.9	397.3	91	91	14	.25	0	0	218.5
77DEC	243	4262	24	32	463.5	347.6	447.4	353.4	75	84	0	.27	2	0	177.6
77NOV	235	5218	25	37	544.8	368.1	372.8	300.2	68	78	16	.25	1	0	208.7
77OCT	135	4061	30	31	353.3	341.9	294.6	243.3	97	223	10	.37	0	0	135.4
TOTAL	253	63745	420	673	396.1	247.2			62	72	7	.34	11	0	151.8

AN/APG-63

DRCD STUDY FIELD DATA ANALYSIS SUMMARY

WEAPON SYSTEM B OP CMND TAC
EQ NO 05 QPA=1 EH/FH=2.61
EQ FUNCTION RADAR FC
EQ IDENT WUC 74FXX LRU 0X EQ DESCR: RADAR S/S

DATA WINDOW - 12 MONTHS
PERIOD ENDING - SEP78

DATE PROCESSED 02/17/79

MONTH YR	WS INV	OP TIME FLT HRS	TOTAL FAILS	TOTAL MA	MTBF EQ HRS	MTBMA EQ HRS	3 MO EMTBF	3 MO EMTBMA	% FAILS	% SH REPS	% NRTS	MAINT INDEX	ABORTS	CONDS	MTBF FL HRS
78SEP	271	6320	373	823	44.2	20.0	48.1	18.8	45	74	45	2.85	3	12	16.9
78AUG	298	7047	331	832	55.6	22.1	49.2	18.4	40	33	38	1.91	3	0	21.3
78JUL	253	5158	301	911	44.7	14.8	44.6	16.5	33	59	38	3.57	2	1	17.1
78JUN	265	6486	360	909	47.0	18.6	44.2	17.4	40	51	32	2.49	2	5	18.0
78MAY	280	5852	362	944	42.2	16.2	43.9	16.9	38	62	36	3.03	6	1	16.2
78APR	267	5159	311	766	43.3	17.6	40.7	15.5	41	48	38	2.86	1	3	16.6
78MAR	272	5549	312	842	46.4	17.2	42.9	15.5	37	50	38	2.98	3	1	17.8
78FEB	258	4262	337	917	33.0	12.1	41.3	15.2	37	41	32	3.53	2	1	12.6
78JAN	257	4371	213	636	53.6	17.9	46.4	18.6	33	42	30	2.51	1	0	20.5
77DEC	243	4262	264	659	42.1	16.9	38.5	18.0	40	57	42	2.82	4	6	16.1
77NOV	235	5218	302	646	45.1	21.1	37.4	18.2	47	36	49	2.09	4	0	17.3
77OCT	135	4061	353	655	30.0	16.2	34.8	17.1	54	90	47	4.32	0	9	11.5
TOTAL	253	63745	3619	9540	43.6	17.4			40	54	38	2.85	31	39	16.7

AN/AWG-20

DRCD STUDY FIELD DATA ANALYSIS SUMMARY

WEAPON SYSTEM B OP CMND TAC
EQ NO 49 QPA=1 EH/FH=1.84
EQ FUNCTION WPNS DELY
EQ IDENT WUC 75M00 LRU 00 EQ DESCR: ARM CONT SYS

DATA WINDOW - 12 MONTHS
PERIOD ENDING - SEP78

DATE PROCESSED 02/17/79

MONTH YR	WS INV	OP TIME FLT HRS	TOTAL FAILS	TOTAL MA	MTBF EQ HRS	MTBMA EQ HRS	3 MO EMTBF	3 MO EMTHMA	% FAILS	% SH REPS	% NRTS	MAINT INDEX	ABORTS	CONDS	MTBF FL HRS
78SEP	271	6320	0	48		242.3		330.9	0	0	0	.07	0	0	
78AUG	298	7047	0	26		498.7		386.4	0	0	0	.02	0	0	
78JUL	253	5158	0	29		327.3		255.5	0	0	0	.04	0	0	
78JUN	265	6486	0	34		351.0		266.1	0	0	0	.05	0	0	
78MAY	280	5852	0	63		170.9	30470.4	272.1	0	0	0	.06	0	0	
78APR	267	5159	0	24		395.5	27544.8	306.1	0	0	0	.04	0	0	
78MAR	272	5549	1	25	10210.2	408.4	26094.9	269.0	4	4	0	.02	0	0	5549.0
78FEB	258	4262	0	41		191.3		221.7	0	0	0	.05	0	0	
78JAN	257	4371	0	31		259.4		280.1	0	0	0	.05	0	0	
77DEC	243	4262	0	35		224.1		251.7	0	0	0	.05	0	0	
77NOV	235	5218	0	25		384.0		236.8	0	0	0	.03	0	0	
77OCT	135	4061	0	39		191.6		215.6	0	3	0	.11	0	0	
TOTAL	253	63745	1	420	117290.8	279.3			0	0	0	.05	0	0	63745.0

AN/AWG-20

DRCD STUDY FIELD DATA ANALYSIS SUMMARY

WEAPON SYSTEM B OP CMND TAC
EQ NO 49 QPA=1 EH/FH=1.84
EQ FUNCTION WPNS DELY
EQ IDENT WUC 75MA0 LRU 11 EQ DESCR: CONTROL ARM

DATA WINDOW - 12 MONTHS
PERIOD ENDING - SEP78

DATE PROCESSED 02/17/79

MONTH YR	WS INV	OP TIME FLT HRS	TOTAL FAILS	TOTAL MA	MTBF EQ HRS	MTBMA EQ HRS	3 MO EMTBF	3 MO EMTHMA	% FAILS	% SH REPS	% NRTS	MAINT INDEX	ABORTS	CONDS	MTBF FL HRS
78SEP	271	6320	3	15	3876.3	775.3	3408.6	811.6	20	73	40	.10	0	0	2106.7
78AUG	298	7047	1	8	12966.5	1620.8	2149.5	731.7	13	50	25	.04	0	0	7047.0
78JUL	253	5158	6	19	1581.8	499.5	1594.3	619.1	32	37	37	.07	0	0	859.7
78JUN	265	6486	9	20	1326.0	596.7	1788.6	748.7	45	20	5	.05	0	0	720.7
78MAY	280	5852	4	13	2691.9	828.3	1904.4	692.5	31	108	38	.05	0	0	1463.0
78APR	267	5159	5	10	1898.5	949.3	1530.3	510.1	50	120	40	.06	0	0	1031.8
78MAR	272	5549	7	21	1458.6	486.2	1304.7	420.9	33	57	33	.09	0	0	792.7
78FEB	258	4262	6	23	1307.0	341.0	1248.8	447.7	26	52	17	.12	0	0	710.3
78JAN	257	4371	7	18	1148.9	446.8	1415.9	653.5	39	22	33	.08	0	0	624.4
77DEC	243	4262	6	12	1307.0	653.5	1557.2	803.7	50	75	33	.06	0	0	710.3
77NOV	235	5218	5	9	1920.2	1066.8	1993.0	854.2	56	33	89	.05	0	0	1043.6
77OCT	135	4061	5	10	1494.4	747.2	2264.1	754.7	50	60	20	.05	0	0	812.2
TOTAL	253	63745	64	178	1832.7	658.9			36	55	31	.07	0	0	996.0

AN/AWG-20

DRCD STUDY FIELD DATA ANALYSIS SUMMARY

WEAPON SYSTEM B   OP CMND TAC   DATA WINDOW - 12 MONTHS
EQ NO 49   QPA=1   EH/FH=1.84   PERIOD ENDING - SEP78
EQ FUNCTION   WPNS DELY
EQ IDENT WUC 75MC0   LRU 12   EQ DESCR: CONV-PROGMR   DATE PROCESSED 02/17/79

MONTH YR	WS INV	OP TIME FLT HRS	TOTAL FAILS	TOTAL MA	MTBF EQ HRS	MTBMA EQ HRS	3 MO EMTBF	3 MO EMTBMA	% FAILS	% SH REPS	% NRTS	MAINT INDEX	ABORTS	CONDS	MTBF FL HRS
78SEP	271	6320	7	36	1661.3	323.0	1262.4	415.7	19	47	33	.14	0	0	902.9
78AUG	298	7047	9	23	1440.7	563.8	955.3	419.4	39	17	26	.06	0	0	783.0
78JUL	253	5158	11	23	862.8	412.6	731.7	338.9	48	52	13	.09	0	0	468.9
78JUN	265	6486	16	36	745.9	331.5	619.1	338.9	44	42	6	.07	0	0	405.4
78MAY	280	5852	17	36	633.4	299.1	648.3	390.6	47	33	6	.11	0	0	344.2
78APR	267	5159	19	23	499.6	412.7	744.5	500.8	83	74	13	.11	0	0	271.5
78MAR	272	5549	11	19	928.2	537.4	1043.8	567.3	58	63	37	.08	0	0	504.5
78FEB	258	4262	7	13	1120.3	603.2	1248.8	697.8	54	69	23	.10	0	0	608.9
78JAN	257	4371	7	14	1148.9	574.5	1061.9	653.5	50	29	21	.11	0	0	624.4
77DEC	243	4262	5	7	1568.4	1120.3	1132.5	673.4	71	186	71	.08	0	0	852.4
77NOV	235	5218	12	18	800.1	533.4	1195.8	569.4	67	50	17	.06	0	0	434.8
77OCT	135	4061	5	12	1494.4	622.7	1415.1	646.9	42	142	33	.10	0	0	812.2
TOTAL	253	63745	126	260	930.9	451.1			48	54	20	.09	0	0	505.9

AN/AWG-20

DRCD STUDY FIFLD DATA ANALYSIS SUMMARY

WEAPON SYSTEM B   OP CMND TAC   DATA WINDOW - 12 MONTHS
EQ NO 49   QPA=1   EH/FH=1.84   PERIOD ENDING - SEP78
EQ FUNCTION   WPNS DELY
EQ IDENT WUC 75MXX   LRU 0X   EQ DESCR: ARM CONT S/S   DATE PROCESSED 02/17/79

MONTH YR	WS INV	OP TIME FLT HRS	TOTAL FAILS	TOTAL MA	MTBF EQ HRS	MTBMA EQ HRS	3 MO EMTBF	3 MO EMTBMA	% FAILS	% SH REPS	% NRTS	MAINT INDEX	ABORTS	CONDS	MTBF FL HRS
78SEP	271	6320	12	99	969.1	117.5	852.1	149.5	12	32	47	.31	0	0	526.7
78AUG	298	7047	10	57	1296.6	227.5	614.1	155.6	18	14	54	.12	0	0	704.7
78JUL	253	5158	18	72	527.3	131.8	473.4	116.2	25	36	29	.21	0	0	286.6
78JUN	265	6486	28	92	426.2	129.7	435.1	122.4	30	37	20	.20	0	1	231.6
78MAY	280	5852	22	113	489.4	95.3	461.7	129.1	19	42	22	.23	0	0	266.0
78APR	267	5159	24	58	395.5	163.7	474.9	137.7	41	74	59	.22	0	1	215.0
78MAR	272	5549	20	65	510.5	157.1	543.6	127.3	31	63	43	.21	0	0	277.4
78FEB	258	4262	14	77	560.1	101.8	593.2	121.7	18	40	27	.29	0	0	304.4
78JAN	257	4371	14	63	574.5	127.7	592.7	149.9	22	22	17	.25	0	0	312.2
77DEC	243	4262	12	55	653.5	142.6	622.9	148.3	22	67	31	.21	0	0	355.2
77NOV	235	5218	17	52	564.8	184.6	724.7	139.9	33	23	56	.14	0	0	306.9
77OCT	135	4061	11	61	679.3	122.5	808.6	131.6	18	72	33	.28	0	0	369.2
TOTAL	253	63745	202	864	580.6	135.8			23	43	35	.22	0	2	315.6

AN/ARC-109

DRCD STUDY FIELD DATA ANALYSIS SUMMARY

WEAPON SYSTEM C   OP CMND MAC
EQ NO 01   QPA=2   EH/FH=1.20
EQ FUNCTION   COMM UHF
EQ IDENT WUC 63A00   LRU 00   EQ DESCR: UHF COMM SYS

DATA WINDOW - 12 MONTHS
PERIOD ENDING - SEP78

DATE PROCESSED 02/17/79

MONTH YR	WS INV	OP TIME FLT HRS	TOTAL FAILS	TOTAL MA	MTBF EQ HRS	MTBMA EQ HRS	3 MO EMTBF	3 MO EMTBMA	% FAILS	% SH REPS	% NRTS	MAINT INDEX	ABORTS	CONDS	MTBF FL HRS
78SEP	74	4089	1	15	9813.6	654.2	3200.0	384.0	7	7	0	.03	0	0	8178.0
78AUG	70	4137	4	28	2482.2	354.6	3397.9	368.4	14	0	0	.03	0	0	2068.5
78JUL	68	3774	4	32	2264.4	283.0	4510.3	421.0	13	0	0	.04	0	0	1887.0
78JUN	61	4831	1	23	11594.4	504.1	11201.6	560.1	4	0	0	.02	0	0	9662.0
78MAY	62	4550	2	20	5460.0	546.0	10862.4	693.3	10	0	0	.03	0	0	4550.0
78APR	65	4621	0	17		652.4	14689.2	716.5	0	0	0	.03	0	0	
78MAR	73	4407	1	10	10576.8	1057.7	12614.4	901.0	10	0	0	.02	0	0	8814.0
78FEB	75	3213	1	14	7711.2	550.8	3955.6	818.4	7	0	0	.02	0	0	6426.0
78JAN	74	2892	0	4		1735.2	3648.3	880.6	0	0	0	.01	0	0	
77DEC	76	3784	5	11	1816.3	825.6	3530.4	688.9	45	0	0	.02	0	0	1513.6
77NOV	78	3965	2	14	4758.0	679.7	5651.5	627.9	14	0	0	.02	0	0	3965.0
77OCT	74	4019	1	16	9645.6	602.8	7262.4	708.5	6	0	0	.02	0	0	8038.0
TOTAL	71	48282	22	204	5267.1	568.0			11	0	0	.02	0	0	4389.3

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DRCD STUDY FIELD DATA ANALYSIS SUMMARY

WEAPON SYSTEM C   OP CMND MAC
EQ NO 01   QPA=2   EH/FH=1.20
EQ FUNCTION   COMM UHF
EQ IDENT WUC 63AA0   LRU 11   EQ DESCR: REC/XMTR

DATA WINDOW - 12 MONTHS
PERIOD ENDING - SEP78

DATE PROCESSED 02/17/79

MONTH YR	WS INV	OP TIME FLT HRS	TOTAL FAILS	TOTAL MA	MTBF EQ HRS	MTBMA EQ HRS	3 MO EMTBF	3 MO EMTBMA	% FAILS	% SH REPS	% NRTS	MAINT INDEX	ABORTS	CONDS	MTBF FL HRS
78SEP	74	4089	40	45	245.3	218.1	204.3	182.3	89	44	7	.09	0	0	204.4
78AUG	70	4137	60	65	165.5	152.8	201.2	173.8	92	51	5	.14	0	0	137.9
78JUL	68	3774	41	48	220.9	188.7	227.1	194.9	85	52	15	.11	0	0	184.1
78JUN	61	4831	51	63	227.3	184.0	227.1	197.7	81	37	0	.11	0	0	189.5
78MAY	62	4550	47	51	232.3	214.1	246.9	226.3	92	45	0	.11	0	0	193.6
78APR	65	4621	50	56	221.8	198.0	249.0	227.7	89	48	0	.10	0	0	184.8
78MAR	73	4407	35	37	302.2	285.9	262.8	238.0	95	51	8	.09	0	0	251.8
78FEB	75	3213	33	36	233.7	214.2	239.7	202.9	92	39	14	.13	0	0	194.7
78JAN	74	2892	28	33	247.9	210.3	232.2	183.7	85	33	24	.08	0	0	206.6
77DEC	76	3784	38	48	239.0	189.2	203.2	158.7	79	60	0	.16	0	0	199.2
77NOV	78	3965	44	58	216.3	164.1	189.6	144.2	76	34	3	.10	0	0	180.2
77OCT	74	4019	57	72	169.2	134.0	207.5	152.1	79	58	4	.14	0	0	141.0
TOTAL	71	48282	524	612	221.1	189.3			86	47	6	.11	0	0	184.3

AN/ARC-109

DRCD STUDY FIELD DATA ANALYSIS SUMMARY

WEAPON SYSTEM C OP CMND MAC
EQ NO 01 QPA=2 EH/FH=1.20
EQ FUNCTION COMM UHF
EQ IDENT WUC 63ACF LRU 12 EQ DESCR: CONTROL

DATA WINDOW - 12 MONTHS
PERIOD ENDING - SEP78

DATE PROCESSED 02/17/79

MONTH YR	WS INV	OP TIME FLT HRS	TOTAL FAILS	TOTAL MA	MTBF EQ HRS	MTBMA EQ HRS	3 MO EMTBF	3 MO EMTBMA	% FAILS	% SH REPS	% NRTS	MAINT INDEX	ABORTS	CONDS	MTBF FL HRS
78SEP	74	4089	10	12	981.4	817.8	654.5	564.7	83	8	0	.00	0	0	817.8
78AUG	70	4137	16	19	620.5	522.6	566.3	509.7	84	26	0	.01	0	0	517.1
78JUL	68	3774	18	20	503.2	452.9	595.7	553.9	90	5	5	.01	0	0	419.3
78JUN	61	4831	20	21	579.7	552.1	672.1	622.3	95	5	0	.01	1	0	483.1
78MAY	62	4550	15	16	728.0	682.5	857.6	775.9	94	19	0	.01	0	0	606.7
78APR	65	4621	15	17	739.4	652.4	964.1	734.5	88	18	0	.02	0	0	616.1
78MAR	73	4407	8	9	1322.1	1175.2	764.5	646.9	89	22	0	.01	0	0	1101.8
78FEB	75	3213	11	14	701.0	550.8	515.9	456.4	79	21	0	.03	0	0	584.2
78JAN	74	2892	14	16	495.8	433.8	580.4	521.2	88	6	0	.01	0	0	413.1
77DEC	76	3784	21	22	432.5	412.8	614.0	504.3	95	23	0	.02	0	0	360.4
77NOV	78	3965	9	11	1057.3	865.1	565.2	441.5	82	45	0	.01	0	0	881.1
77OCT	74	4019	16	23	602.8	419.4	538.0	415.0	70	22	0	.02	0	0	502.4
TOTAL	71	48282	173	200	669.8	579.4			87	18	1	.01	1	0	558.2

AN/ARC-109

DRCD STUDY FIELD DATA ANALYSIS SUMMARY

WEAPON SYSTEM C OP CMND MAC
EQ NO 01 QPA=2 EH/FH=1.20
EQ FUNCTION COMM UHF
EQ IDENT WUC 63AXX LRU 0X EQ DESCR: UHF COMM S/S

DATA WINDOW - 12 MONTHS
PERIOD ENDING - SEP78

DATE PROCESSED 02/17/79

MONTH YR	WS INV	OP TIME FLT HRS	TOTAL FAILS	TOTAL MA	MTBF EQ HRS	MTBMA EQ HRS	3 MO EMTBF	3 MO EMTBMA	% FAILS	% SH REPS	% NRTS	MAINT INDEX	ABORTS	CONDS	MTBF FL HRS
78SEP	74	4089	67	91	146.5	107.8	117.1	80.9	74	37	18	.16	0	0	122.1
78AUG	70	4137	97	136	102.4	73.0	108.4	75.7	71	48	13	.27	0	0	85.3
78JUL	68	3774	82	129	110.5	70.2	118.7	83.7	64	21	9	.19	0	0	92.0
78JUN	61	4831	103	139	112.6	83.4	122.6	89.1	74	24	14	.19	1	0	93.8
78MAY	62	4550	81	109	134.8	100.2	141.7	102.8	74	31	6	.18	0	0	112.3
78APR	65	4621	90	129	123.2	86.0	139.9	100.6	70	27	5	.20	0	0	102.7
78MAR	73	4407	59	79	179.3	133.9	140.9	108.7	75	28	8	.14	0	0	149.4
78FEB	75	3213	61	84	126.4	91.8	116.9	89.9	73	25	8	.20	0	0	105.3
78JAN	74	2892	59	69	117.6	100.6	117.1	86.3	86	20	19	.14	0	0	98.0
77DEC	76	3784	83	111	109.4	81.8	110.3	78.5	75	33	7	.23	0	0	91.2
77NOV	78	3965	76	116	125.2	82.0	102.8	72.1	66	22	6	.15	0	0	104.3
77OCT	74	4019	97	133	99.4	72.5	107.2	75.1	73	41	6	.22	0	0	82.9
TOTAL	71	48282	955	1325	121.3	87.5			72	30	10	.19	1	0	101.1

MARK V TACAN

DRCD STUDY FIELD DATA ANALYSIS SUMMARY

WEAPON SYSTEM C OP CMND MAC — DATA WINDOW - 12 MONTHS — PAGE 11
EQ NO 04 QPA=2 EH/FH=1.19 — PERIOD ENDING - SEP78
EQ FUNCTION NAVIGATION
EQ IDENT WUC 71L00 LRU 00 EQ DESCR: TACAN SYS — DATE PROCESSED 02/17/79

MONTH YR	WS INV	OP TIME FLT HRS	TOTAL FAILS	TOTAL MA	MTBF EQ HRS	MTBMA EQ HRS	3 MO EMTBF	3 MO EMTBMA	% FAILS	% SH REPS	% NRTS	MAINT INDEX	ABORTS	CONDS	MTBF FL HRS
78SEP	74	4089	0	16		608.2		560.0	0	0	0	.01	0	0	
78AUG	70	4137	0	13		757.4		689.2	0	0	0	.01	0	0	
78JUL	68	3774	0	22		408.3	31308.9	802.8	0	0	0	.02	0	0	
78JUN	61	4831	0	9		1277.5	33324.8	980.1	0	0	0	.03	0	0	
78MAY	62	4550	1	8	10829.0	1353.6	32315.6	850.4	13	0	0	.01	0	0	9100.0
78APR	65	4621	0	17		646.9		539.5	0	0	0	.01	0	0	
78MAR	73	4407	0	13		806.8		510.6	0	0	0	.02	0	0	
78FEB	75	3213	0	24		318.6		420.3	0	0	0	.03	0	0	
78JAN	74	2892	0	12		573.6	25325.6	487.0	0	0	0	.02	0	0	
77DEC	76	3784	0	20		450.3	28007.8	418.0	0	0	0	.02	0	0	
77NOV	78	3965	1	20	9436.7	471.8	14011.1	459.4	5	0	0	.02	0	0	7930.0
77OCT	74	4019	0	27		354.3	28807.5	554.0	0	0	0	.02	0	0	
TOTAL	71	48282	2	201	57455.6	571.7			1	0	0	.02	0	0	48282.0

MARK V TACAN

DRCD STUDY FIELD DATA ANALYSIS SUMMARY

WEAPON SYSTEM C OP CMND MAC — DATA WINDOW - 12 MONTHS
EQ NO 04 QPA=2 EH/FH=1.19 — PERIOD ENDING - SEP78
EQ FUNCTION NAVIGATION
EQ IDENT WUC 71LA0 LRU 11 EQ DESCR: REC/XMTR — DATE PROCESSED 02/17/79

MONTH YR	WS INV	OP TIME FLT HRS	TOTAL FAILS	TOTAL MA	MTBF EQ HRS	MTBMA EQ HRS	3 MO EMTBF	3 MO EMTBMA	% FAILS	% SH REPS	% NRTS	MAINT INDEX	ABORTS	CONDS	MTBF FL HRS
78SEP	74	4089	69	77	141.0	126.4	164.1	151.9	90	27	18	.13	0	0	118.5
78AUG	70	4137	51	51	193.1	193.1	175.3	167.5	100	31	16	.10	0	0	162.2
78JUL	68	3774	54	60	166.3	149.7	195.7	178.9	90	35	10	.11	0	0	139.8
78JUN	61	4831	68	70	169.1	164.3	191.5	169.2	97	56	10	.13	0	0	142.1
78MAY	62	4550	38	45	285.0	240.6	192.4	160.0	84	76	20	.10	0	0	239.5
78APR	65	4621	68	82	161.7	134.1	163.7	136.1	83	51	7	.17	0	0	135.9
78MAR	73	4407	62	75	169.2	139.8	166.8	139.0	83	49	16	.15	0	0	142.2
78FEB	75	3213	48	57	159.3	134.2	170.5	146.2	84	49	4	.12	0	0	133.9
78JAN	74	2892	40	48	172.1	143.4	162.3	136.9	83	46	15	.16	0	0	144.6
77DEC	76	3784	50	56	180.1	160.8	153.0	129.1	89	55	11	.12	0	0	151.4
77NOV	78	3965	66	81	143.0	116.5	132.2	113.9	81	37	6	.14	0	0	120.2
77OCT	74	4019	67	80	142.8	119.6	140.5	125.3	84	29	16	.11	0	0	120.0
TOTAL	71	48282	681	782	168.7	145.9			87	44	12	.13	0	0	141.8

MARK V TACAN

DRCD STUDY FIELD DATA ANALYSIS SUMMARY

WEAPON SYSTEM C   OP CMND MAC   DATA WINDOW - 12 MONTHS
EQ NO 04   QPA=2   EH/FH=1.19   PERIOD ENDING - SEP78
EQ FUNCTION NAVIGATION
EQ IDENT WUC 71LCC   LRU 12   EQ DESCR: CONTROL   DATE PROCESSED 02/17/79

MONTH YR	WS INV	OP TIME FLT HRS	TOTAL FAILS	TOTAL MA	MTBF EQ HRS	MTBMA EQ HRS	3 MO EMTBF	3 MO EMTBMA	% FAILS	% SH REPS	% NRTS	MAINT INDEX	ABORTS	CONDS	MTBF FL HRS
78SEP	74	4089	2	3	4865.9	3243.9	1503.2	1241.7	67	67	33	.00	0	0	4089.0
78AUG	70	4137	7	9	1406.6	1094.0	1378.5	1166.4	78	11	11	.01	0	0	1182.0
78JUL	68	3774	10	11	898.2	816.6	1739.4	1361.3	91	9	36	.01	0	0	754.8
78JUN	61	4831	5	6	2299.6	1916.3	2563.4	1960.3	83	0	33	.00	0	0	1932.4
78MAY	62	4550	3	6	3609.7	1804.8	2693.0	1700.8	50	17	50	.01	0	0	3033.3
78APR	65	4621	5	5	2199.6	2199.6	2648.5	1165.3	100	0	40	.00	0	0	1848.4
78MAR	73	4407	4	8	2622.2	1311.1	3574.1	1191.4	50	13	13	.01	0	0	2203.5
78FEB	75	3213	2	12	3823.5	637.2	5884.0	1384.5	17	17	17	.01	0	0	3213.0
78JAN	74	2892	1	1	6883.0	6883.0	4220.9	2302.3	100	0	200	.00	0	0	5784.0
77DEC	76	3784	1	4	9005.9	2251.5	2334.0	1273.1	25	0	25	.00	0	0	7568.0
77NOV	78	3965	4	6	2359.2	1572.8	1474.8	903.9	67	0	67	.00	0	0	1982.5
77OCT	74	4019	7	12	1366.5	797.1	1440.4	900.2	58	17	25	.00	0	0	1148.3
TOTAL	71	48282	51	83	2253.2	1384.5			61	12	31	.00	0	0	1893.4

MARK V TACAN

DRCD STUDY FIELD DATA ANALYSIS SUMMARY

WEAPON SYSTEM C   OP CMND MAC   DATA WINDOW - 12 MONTHS
EQ NO 04   QPA=2   EH/FH=1.19   PERIOD ENDING - SEP78
EQ FUNCTION NAVIGATION
EQ IDENT WUC 71LXX   LRU 0X   EQ DESCR: TACAN S/S   DATE PROCESSED 02/17/79

MONTH YR	WS INV	OP TIME FLT HRS	TOTAL FAILS	TOTAL MA	MTBF EQ HRS	MTBMA EQ HRS	3 MO EMTBF	3 MO EMTBMA	% FAILS	% SH REPS	% NRTS	MAINT INDEX	ABORTS	CONDS	MTBF FL HRS
78SEP	74	4089	76	104	128.1	93.6	135.4	99.2	73	22	56	.16	0	0	107.6
78AUG	70	4137	62	81	158.8	121.6	141.7	109.1	77	21	47	.13	0	0	133.5
78JUL	68	3774	73	103	123.0	87.2	158.9	120.9	71	21	57	.17	0	0	103.4
78JUN	61	4831	79	94	145.5	122.3	160.2	121.6	84	43	57	.18	0	0	122.3
78MAY	62	4550	45	62	240.6	174.7	152.4	109.9	73	56	113	.14	0	0	202.2
78APR	65	4621	84	118	130.9	93.2	131.2	88.3	71	36	75	.21	0	0	110.0
78MAR	73	4407	83	114	126.4	92.0	131.7	88.4	73	36	50	.20	0	0	106.2
78FEB	75	3213	55	98	139.0	78.0	135.3	83.5	56	31	45	.17	0	0	116.8
78JAN	74	2892	52	71	132.4	96.9	122.9	79.4	73	32	52	.20	0	0	111.2
77DEC	76	3784	67	113	134.4	79.7	114.3	72.0	59	27	44	.16	0	0	113.0
77NOV	78	3965	87	135	108.5	69.9	97.6	67.4	64	22	33	.19	0	0	91.1
77OCT	74	4019	91	141	105.1	67.8	102.5	75.2	65	18	33	.15	0	0	88.3
TOTAL	71	48282	854	1234	134.6	93.1			69	29	52	.17	0	0	113.1

TISEO

DRCD STUDY FIELD DATA ANALYSIS SUMMARY

WEAPON SYSTEM E OP CMND TAC
EQ NO 52 QPA=1 EH/FH=1.60
EQ FUNCTION RECONN
EQ IDENT WUC 71U00 LRU 00 EQ DESCR: TISEO SYS

DATA WINDOW - 12 MONTHS
PERIOD ENDING - SEP78

DATE PROCESSED 02/17/79

MONTH YR	WS INV	OP TIME FLT HRS	TOTAL FAILS	TOTAL MA	MTBF EQ HRS	MTBMA EQ HRS	3 MO EMTBF	3 MO EMTBMA	% FAILS	% SH REPS	% NRTS	MAINT INDEX	ABORTS	CONDS	MTBF FL HRS
78SEP	646	12969	9	78	2305.6	266.0	3023.1	226.7	12	0	0	.07	0	0	1441.0
78AUG	644	14407	4	124	5762.8	185.9	3438.9	226.9	3	0	0	.08	0	0	3601.8
78JUL	628	12302	8	78	2460.4	252.3	2544.1	241.8	10	0	0	.07	0	0	1537.8
78JUN	665	14128	7	86	3229.3	262.8	2583.3	254.4	8	1	0	.05	0	0	2018.3
78MAY	662	13321	10	99	2131.4	215.3	2614.6	243.7	10	1	0	.05	0	0	1332.1
78APR	682	14530	9	79	2583.1	294.3	3744.9	260.9	11	0	0	.06	0	0	1614.4
78MAR	690	14636	7	101	3345.4	231.9	6809.6	255.4	7	0	0	.06	0	0	2090.9
78FEB	676	10624	1	64	16998.4	265.6	8368.5	254.7	2	0	2	.06	0	0	10624.0
78JAN	694	13044	1	75	20870.4	278.3	4708.1	270.1	1	0	0	.05	0	0	13044.0
77DEC	670	12944	5	91	4142.1	227.6	3239.7	248.2	5	0	0	.06	0	0	2588.8
77NOV	659	15208	8	78	3041.6	312.0	3510.8	249.8	10	0	0	.04	0	0	1901.0
77OCT	564	10320	6	79	2752.0	209.0	5734.8	247.4	8	0	0	.05	0	0	1720.0
TOTAL	657	158433	75	1032	3379.9	245.6			7	0	0	.06	0	0	2112.4

TISEO

DRCD STUDY FIELD DATA ANALYSIS SUMMARY

WEAPON SYSTEM E OP CMND TAC
EQ NO 52 QPA=1 EH/FH=1.60
EQ FUNCTION RECONN
EQ IDENT WUC 71UA0 LRU 11 EQ DESCR: STABGEN CONV

DATA WINDOW - 12 MONTHS
PERIOD ENDING - SEP78

DATE PROCESSED 02/17/79

MONTH YR	WS INV	OP TIME FLT HRS	TOTAL FAILS	TOTAL MA	MTBF EQ HRS	MTBMA EQ HRS	3 MO EMTBF	3 MO EMTBMA	% FAILS	% SH REPS	% NRTS	MAINT INDEX	ABORTS	CONDS	MTBF FL HRS
78SEP	646	12969	36	45	576.4	461.1	496.0	362.8	80	47	18	.04	0	0	360.3
78AUG	644	14407	54	66	426.9	339.0	514.5	359.0	79	47	12	.06	0	0	266.8
78JUL	628	12302	38	62	518.0	317.5	567.9	351.4	61	37	11	.07	0	0	323.7
78JUN	665	14128	35	52	645.9	434.7	610.6	404.6	67	96	25	.05	0	0	403.7
78MAY	662	13321	39	67	546.5	318.1	647.4	417.1	58	46	16	.07	0	0	341.6
78APR	682	14530	36	47	645.8	494.6	649.6	445.2	77	55	15	.08	0	0	403.6
78MAR	690	14636	30	49	780.6	477.9	688.6	440.9	61	39	14	.05	0	0	487.9
78FEB	676	10624	32	47	531.2	361.7	623.2	406.8	68	57	4	.06	0	0	332.0
78JAN	694	13044	27	43	773.0	485.4	794.1	495.6	63	58	5	.05	0	0	483.1
77DEC	670	12944	35	54	591.7	383.5	580.7	370.8	65	59	19	.07	0	0	369.8
77NOV	659	15208	21	36	1158.7	675.9	531.0	349.1	58	28	14	.02	0	0	724.2
77OCT	564	10320	50	76	330.2	217.3	432.1	297.6	66	53	12	.11	0	0	206.4
TOTAL	657	158433	433	646	585.4	392.4			67	52	14	.06	0	0	365.9

TISEO

DRCD STUDY FIELD DATA ANALYSIS SUMMARY

WEAPON SYSTEM E   OP CMND TAC   DATA WINDOW - 12 MONTHS   PAGE 14
EQ NO 52   QPA=1   EH/FH=1.60   PERIOD ENDING - SEP78
EQ FUNCTION RECONN
EQ IDENT WUC 71UD0   LRU 12   EQ DESCR: E-O CONV   DATE PROCESSED 02/17/79

MONTH YR	WS INV	OP TIME FLT HRS	TOTAL FAILS	TOTAL MA	MTBF EQ HRS	MTBMA EQ HRS	3 MO EMTBF	3 MO EMTBMA	% FAILS	% SH REPS	% NRTS	MAINT INDEX	ABORTS	CONDS	MTBF FL HRS
78SEP	646	12969	0	0				31742.4				.00	0	0	
78AUG	644	14407	0	0			65339.2	16334.8				.00	0	0	
78JUL	628	12302	0	2		9841.6	63601.6	15900.4	0	0	0	.00	0	0	
78JUN	665	14128	1	2	22604.8	11302.4	67166.4	33583.2	50	0	0	.00	0	0	14128.0
78MAY	662	13321	0	0				33989.6				.00	0	0	
78APR	682	14530	0	0			63664.0	15916.0				.00	0	0	
78MAR	690	14636	0	2		11708.8	61286.4	15321.6	0	0	0	.00	0	0	
78FEB	676	10624	1	2	16998.4	8499.2	58579.2	29289.6	50	0	0	.00	0	0	10624.0
78JAN	694	13044	0	0				65913.6				.00	0	0	
77DEC	670	12944	0	0				20518.4				.00	0	0	
77NOV	659	15208	0	1		24332.8		15798.4	0	0	0	.00	0	0	
77OCT	564	10320	0	2		8256.0	31541.6	12616.6	0	0	0	.00	0	0	
TOTAL	657	158433	2	11	126746.4	23044.8			18	0	0	.00	0	0	79216.5

TISEO

DRCD STUDY FIELD DATA ANALYSIS SUMMARY

WEAPON SYSTEM E   OP CMND TAC   DATA WINDOW - 12 MONTHS
EQ NO 52   QPA=1   EH/FH=1.60   PERIOD ENDING - SEP78
EQ FUNCTION RECONN
EQ IDENT WUC 71UF0   LRU 13   EQ DESCR: STAB GENERAT   DATE PROCESSED 02/17/79

MONTH YR	WS INV	OP TIME FLT HRS	TOTAL FAILS	TOTAL MA	MTBF EQ HRS	MTBMA EQ HRS	3 MO EMTBF	3 MO EMTBMA	% FAILS	% SH REPS	% NRTS	MAINT INDEX	ABORTS	CONDS	MTBF FL HRS
78SEP	646	12969	0	0								.00	0	0	
78AUG	644	14407	0	0			65339.2	65339.2				.00	0	0	
78JUL	628	12302	0	0			63601.6	63601.6				.00	0	0	
78JUN	665	14128	1	1	22604.8	22604.8	33583.2	33583.2	100	0	0	.00	0	0	14128.0
78MAY	662	13321	0	0			67979.2	67979.2				.00	0	0	
78APR	682	14530	1	1	23248.0	23248.0	63664.0	63664.0	100	0	0	.00	0	0	14530.0
78MAR	690	14636	0	0								.00	0	0	
78FEB	676	10624	0	0								.00	0	0	
78JAN	694	13044	0	0								.00	0	0	
77DEC	670	12944	0	0								.00	0	0	
77NOV	659	15208	0	0								.00	0	0	
77OCT	564	10320	0	0								.00	0	0	
TOTAL	657	158433	2	2	126746.4	126746.4			100	0	0	.00	0	0	79216.5

TISEO

DRCD STUDY FIELD DATA ANALYSIS SUMMARY

WEAPON SYSTEM E OP CMND TAC
EQ NO 52 QPA=1 EH/FH=1.60
EQ FUNCTION RECONN
EQ IDENT WUC 71UH0 LRU 14 EQ DESCR: VIDEO PROC

DATA WINDOW - 12 MONTHS
PERIOD ENDING - SEP78

PAGE 15

DATE PROCESSED 02/17/79

MONTH YR	WS INV	OP TIME FLT HRS	TOTAL FAILS	TOTAL MA	MTBF EQ HRS	MTBMA EQ HRS	3 MO EMTBF	3 MO EMTBMA	% FAILS	% SH REPS	% NRTS	MAINT INDEX	ABORTS	CONDS	MTBF FL HRS
78SEP	646	12969	16	21	1296.9	988.1	1113.8	857.9	76	71	10	.03	0	0	810.6
78AUG	644	14407	19	24	1213.2	960.5	1126.5	806.7	79	75	0	.04	0	0	758.3
78JUL	628	12302	22	29	894.7	678.7	1200.0	766.3	76	48	7	.05	1	0	559.2
78JUN	665	14128	17	28	1329.7	807.3	1399.3	850.2	61	71	4	.04	0	0	831.1
78MAY	662	13321	14	26	1522.4	819.8	1477.8	957.5	54	15	19	.02	0	0	951.5
78APR	682	14530	17	25	1367.5	929.9	1326.3	936.2	68	72	8	.04	0	0	854.7
78MAR	690	14636	15	20	1561.2	1170.9	1494.8	988.5	75	60	5	.03	0	0	975.7
78FEB	676	10624	16	23	1062.4	739.1	1394.7	887.6	70	70	0	.05	0	0	664.0
78JAN	694	13044	10	19	2087.0	1098.4	2059.8	1267.6	53	58	11	.03	0	0	1304.4
77DEC	670	12944	16	24	1294.4	862.9	2051.8	1231.1	67	54	17	.04	0	0	809.0
77NOV	659	15208	6	9	4055.5	2703.6	2747.5	1541.3	67	44	0	.01	0	0	2534.7
77OCT	564	10320	8	17	2064.0	971.3	1802.4	1190.2	47	41	6	.02	0	0	1290.0
TOTAL	657	158433	176	265	1440.3	956.6			66	57	8	.03	1	0	900.2

TISEO

DRCD STUDY FIELD DATA ANALYSIS SUMMARY

WEAPON SYSTEM E OP CMND TAC
EQ NO 52 QPA=1 EH/FH=1.60
EQ FUNCTION RECONN
EQ IDENT WUC 71UK0 LRU 15 EQ DESCR: POW SUP ASSY

DATA WINDOW - 12 MONTHS
PERIOD ENDING - SEP78

DATE PROCESSED 02/17/79

MONTH YR	WS INV	OP TIME FLT HRS	TOTAL FAILS	TOTAL MA	MTBF EQ HRS	MTBMA EQ HRS	3 MO EMTBF	3 MO EMTBMA	% FAILS	% SH REPS	% NRTS	MAINT INDEX	ABORTS	CONDS	MTBF FL HRS
78SEP	646	12969	5	2	4150.1	10375.2	2760.2	9069.3	250	150	0	.01	0	0	2593.8
78AUG	644	14407	12	5	1920.9	4610.2	2970.0	7259.9	240	120	0	.01	0	0	1200.6
78JUL	628	12302	6	0	3280.5		3975.1	7066.8				.01	0	0	2050.3
78JUN	665	14128	4	4	5651.2	5651.2	5597.2	6716.6	100	100	25	.01	0	0	3532.0
78MAY	662	13321	6	5	3552.3	4262.7	4531.9	4531.9	120	20	0	.01	0	0	2220.2
78APR	682	14530	2	1	11624.0	23248.0	3979.0	2768.0	200	300	0	.01	0	0	7265.0
78MAR	690	14636	7	9	3345.4	2602.0	3225.6	1751.0	78	44	0	.01	0	0	2090.9
78FEB	676	10624	7	13	2428.3	1307.6	3254.4	1541.6	54	31	8	.01	0	0	1517.7
78JAN	694	13044	5	13	4174.1	1605.4	3877.3	1938.6	38	38	0	.02	0	0	2608.8
77DEC	670	12944	6	12	3451.7	1725.9	4396.8	2367.5	50	25	17	.01	0	0	2157.3
77NOV	659	15208	6	9	4055.5	2703.6	4212.9	2527.7	67	11	0	.01	0	0	2534.7
77OCT	564	10320	2	5	8256.0	3302.4	4852.6	2742.7	40	20	0	.01	0	0	5160.0
TOTAL	657	158433	68	78	3727.8	3249.9			87	51	6	.01	0	0	2329.9

TISEO

DRCD STUDY FIELD DATA ANALYSIS SUMMARY

WEAPON SYSTEM E OP CMND TAC DATA WINDOW - 12 MONTHS PAGE 16
EQ NO 52 QPA=1 EH/FH=1.60 PERIOD ENDING - SEP78
EQ FUNCTION RECONN
EQ IDENT WUC 71ULO LRU 16 EQ DESCR: CONTROL DATE PROCESSED 02/17/79

MONTH YR	WS INV	OP TIME FLT HRS	TOTAL FAILS	TOTAL MA	MTBF EQ HRS	MTBMA EQ HRS	3 MO EMTBF	3 MO EMTBMA	% FAILS	% SH REPS	% NRTS	MAINT INDEX	ABORTS	CONDS	MTBF FL HRS
78SEP	646	12969	6	9	3458.4	2305.6	2760.2	1715.8	67	0	0	.00	0	0	2161.5
78AUG	644	14407	7	13	3293.0	1773.2	2613.6	1390.2	54	31	8	.01	0	0	2058.1
78JUL	628	12302	10	15	1968.3	1312.2	2355.6	1042.6	67	27	0	.01	0	0	1230.2
78JUN	665	14128	8	19	2825.6	1189.7	2798.6	1066.1	42	26	0	.01	0	0	1766.0
78MAY	662	13321	9	27	2368.2	789.4	2614.6	1114.4	33	30	4	.01	0	0	1480.1
78APR	682	14530	7	17	3321.1	1367.5	2122.1	1248.3	41	41	0	.01	0	0	2075.7
78MAR	690	14636	10	17	2341.8	1377.5	1702.4	1201.7	59	41	0	.01	0	0	1463.6
78FEB	676	10624	13	17	1307.6	999.9	1583.2	976.3	76	59	0	.01	0	0	817.2
78JAN	694	13044	13	17	1605.4	1227.7	1883.2	1156.4	76	53	0	.01	0	0	1003.4
77DEC	670	12944	11	26	1882.8	796.6	2198.4	1139.9	42	58	4	.02	0	0	1176.7
77NOV	659	15208	11	14	2212.1	1738.1	1974.8	1289.7	79	29	0	.01	0	0	1382.5
77OCT	564	10320	6	14	2752.0	1179.4	2426.3	1433.7	43	64	0	.01	0	0	1720.0
TOTAL	657	158433	111	205	2283.7	1236.6			54	40	1	.01	0	0	1427.3

TISEO

DRCD STUDY FIELD DATA ANALYSIS SUMMARY

WEAPON SYSTEM E OP CMND TAC DATA WINDOW - 12 MONTHS
EQ NO 52 QPA=1 EH/FH=1.60 PERIOD ENDING - SEP78
EQ FUNCTION RECONN
EQ IDENT WUC 71UXX LRU 0X EQ DESCR: TISEO S/S DATE PROCESSED 02/17/79

MONTH YR	WS INV	OP TIME FLT HRS	TOTAL FAILS	TOTAL MA	MTBF EQ HRS	MTBMA EQ HRS	3 MO EMTBF	3 MO EMTBMA	% FAILS	% SH REPS	% NRTS	MAINT INDEX	ABORTS	CONDS	MTBF FL HRS
78SEP	646	12969	77	162	269.5	128.1	237.8	104.6	48	25	14	.16	0	0	168.4
78AUG	644	14407	105	250	219.5	92.2	241.1	100.2	42	25	10	.20	0	0	137.2
78JUL	628	12302	85	195	231.6	100.9	252.4	98.3	44	24	12	.21	1	0	144.7
78JUN	665	14128	81	207	279.1	109.2	276.4	105.8	39	39	14	.17	0	0	174.4
78MAY	662	13321	86	245	247.8	87.0	290.5	108.4	35	18	12	.17	0	0	154.9
78APR	682	14530	76	183	305.9	127.0	286.8	116.0	42	32	9	.20	0	1	191.2
78MAR	690	14636	72	199	325.2	117.7	300.4	114.8	36	21	6	.15	0	0	203.3
78FEB	676	10624	74	167	229.7	101.8	277.6	107.9	44	34	9	.20	0	0	143.6
78JAN	694	13044	58	168	359.8	124.2	343.3	125.3	35	30	16	.17	0	0	224.9
77DEC	670	12944	79	208	262.2	99.6	293.1	111.7	38	31	10	.20	0	1	163.8
77NOV	659	15208	55	150	442.4	162.2	288.6	113.7	37	13	6	.09	0	0	276.5
77OCT	564	10320	76	193	217.3	85.6	256.4	106.6	39	30	6	.20	0	0	135.8
TOTAL	657	158433	924	2327	274.3	108.9			40	27	10	.17	1	2	171.5

DIRECT RADAR SCOPE RECORDING SYSTEM

DRCD STUDY FIELD DATA ANALYSIS SUMMARY

WEAPON SYSTEM E   OP CMND TAC
EQ NO 51   GPA=1   EH/FH=1.54
EQ FUNCTION   RECONN
EQ IDENT WUC 77J10   LRU 11   EQ DESCR: DRSRS E.F.C.

DATA WINDOW - 12 MONTHS
PERIOD ENDING - SEP78

DATE PROCESSED 02/17/79

MONTH YR	WS INV	OP TIME FLT HRS	TOTAL FAILS	TOTAL MA	MTBF EQ HRS	MTBMA EQ HRS	3 MO EMTBF	3 MO EMTBMA	% FAILS	% SH REPS	% NRTS	MAINT INDEX	ABORTS	CONDS	MTBF FL HRS
78SEP	646	12969	0	2		9986.1	10184.0	4700.3	0	150	0	.00	0	0	
78AUG	644	14407	2	6	11093.4	3697.8	6987.7	4192.6	33	133	0	.00	0	0	7203.5
78JUL	628	12302	4	5	4736.3	3789.0	5101.4	4081.1	80	40	40	.00	0	0	3075.5
78JUN	665	14128	3	4	7252.4	5439.3	5387.3	3402.5	75	75	0	.00	0	0	4709.3
78MAY	662	13321	5	6	4102.9	3419.1	4673.6	2516.5	83	67	0	.00	0	0	2664.2
78APR	682	14530	4	9	5594.0	2486.2	4713.6	2269.5	44	67	0	.00	0	0	3632.5
78MAR	690	14636	5	11	4507.9	2049.0	4915.7	2034.1	45	45	0	.00	0	0	2927.2
78FEB	676	10624	4	7	4090.2	2337.3	5638.2	1944.2	57	100	0	.00	0	0	2656.0
78JAN	694	13044	3	11	6695.9	1826.2	7930.2	2265.8	27	9	0	.00	0	0	4348.0
77DEC	670	12944	3	11	6644.6	1812.2	7405.9	1974.9	27	55	0	.00	0	0	4314.7
77NOV	659	15208	2	6	11710.2	3903.4	8689.1	2252.7	33	67	0	.00	0	0	7604.0
77OCT	564	10320	3	13	5297.6	1222.5	7589.7	1597.8	23	54	0	.00	0	0	3440.0
TOTAL	657	158433	38	91	6420.7	2681.2			42	62	2	.00	0	0	4169.3

DIRECT RADAR SCOPE RECORDING SYSTEM

DRCD STUDY FIELD DATA ANALYSIS SUMMARY

WEAPON SYSTEM E   OP CMND TAC
EQ NO 51   GPA=1   EH/FH=1.54
EQ FUNCTION   /RECONN
EQ IDENT WUC 77J20   LRU 12   EQ DESCR: RECDR ASSY

DATA WINDOW - 12 MONTHS
PERIOD ENDING - SEP78

DATE PROCESSED 02/17/79

MONTH YR	WS INV	OP TIME FLT HRS	TOTAL FAILS	TOTAL MA	MTBF EQ HRS	MTBMA EQ HRS	3 MO EMTBF	3 MO EMTBMA	% FAILS	% SH REPS	% NRTS	MAINT INDEX	ABORTS	CONDS	MTBF FL HRS
78SEP	646	12969	2	6	9986.1	3328.7	7638.0	1745.8	33	0	0	.00	0	0	6484.5
78AUG	644	14407	5	12	4437.4	1848.9	6288.9	1572.2	42	8	0	.00	0	0	2881.4
78JUL	628	12302	1	17	18945.1	1114.4	5101.4	1423.6	6	24	0	.00	0	0	12302.0
78JUN	665	14128	4	11	5439.3	1977.9	3078.5	1469.3	36	0	0	.00	0	0	3532.0
78MAY	662	13321	7	15	2930.6	1367.6	2617.2	1454.0	47	7	0	.00	0	0	1903.0
78APR	682	14530	10	18	2237.6	1243.1	2188.4	1134.8	56	28	6	.01	0	0	1453.0
78MAR	690	14636	8	12	2817.4	1878.3	2184.7	1179.8	67	42	0	.00	0	0	1829.5
78FEB	676	10624	10	24	1636.1	681.7	2013.7	1105.5	42	29	0	.01	0	0	1062.4
78JAN	694	13044	9	14	2232.0	1434.8	2537.7	1762.3	64	43	0	.00	0	0	1449.3
77DEC	670	12944	9	13	2214.9	1533.4	2962.3	1519.2	69	38	0	.00	0	0	1438.2
77NOV	659	15208	7	9	3345.6	2602.3	3577.9	1600.6	78	44	0	.00	0	0	2172.6
77OCT	564	10320	4	17	3973.2	934.9	3195.7	1084.2	24	106	0	.01	0	0	2580.0
TOTAL	657	158433	76	168	3210.4	1452.3			45	33	1	.00	0	0	2084.6

DIRECT RADAR SCOPE RECORDING SYSTEM

DRCD STUDY FIELD DATA ANALYSIS SUMMARY

WEAPON SYSTEM E   OP CMND TAC   DATA WINDOW - 12 MONTHS   PAGE 18
EQ NO 51   QPA=1   EH/FH=1.54   PERIOD ENDING - SEP78
EQ FUNCTION   /RECONN
EQ IDENT WUC 77J2A   LRU 13   EQ DESCR: PERISC DRS   DATE PROCESSED 02/17/79

MONTH YR	WS INV	OP TIME FLT HRS	TOTAL FAILS	TOTAL MA	MTBF EQ HRS	MTBMA EQ HRS	3 MO EMTBF	3 MO EMTBMA	% FAILS	% SH REPS	% NRTS	MAINT INDEX	ABORTS	CONDS	MTBF FL HRS
78SEP	646	12969	3	8	6657.4	2496.5	5092.0	2263.1	38	75	0	.00	0	0	4323.0
78AUG	644	14407	2	3	11093.4	7395.6	5717.2	2028.7	67	233	0	.00	0	0	7203.5
78JUL	628	12302	7	16	2706.4	1184.1	5101.4	1800.5	44	56	0	.01	0	0	1757.4
78JUN	665	14128	2	12	10878.6	1813.1	9235.4	2303.8	17	75	0	.00	0	0	7064.0
78MAY	662	13321	3	6	6838.1	3419.1	7270.0	2516.5	50	133	0	.00	0	0	4440.3
78APR	682	14530	2	10	11188.1	2237.6	6127.7	1856.9	20	90	0	.00	0	0	7265.0
78MAR	690	14636	4	10	5634.9	2253.9	5362.6	1843.4	40	90	0	.01	0	0	3659.0
78FEB	676	10624	4	13	4090.2	1258.5	8054.6	1879.4	31	31	0	.00	0	0	2656.0
78JAN	694	13044	3	9	6695.9	2232.0	15860.5	3339.0	33	133	0	.00	0	0	4348.0
77DEC	670	12944	0	8		2491.7	29623.4	4937.2	0	88	0	.00	0	0	
77NOV	659	15208	1	2	23420.3	11710.2	30411.9	7603.0	50	250	0	.00	0	0	15208.0
77OCT	564	10320	1	2	15892.8	7946.4	20239.2	4337.0	50	200	0	.00	0	0	10320.0
TOTAL	657	158433	32	99	7624.6	2464.5			32	90	0	.00	0	0	4951.0

DIRECT RADAR SCOPE RECORDING SYSTEM

DRCD STUDY FIELD DATA ANALYSIS SUMMARY

WEAPON SYSTEM E   OP CMND TAC   DATA WINDOW - 12 MONTHS
EQ NO 51   QPA=1   EH/FH=1.54   PERIOD ENDING - SEP78
EQ FUNCTION   RECONN
EQ IDENT WUC 77J2K   LRU 14   EQ DESCR: CAMERA   DATE PROCESSED 02/17/79

MONTH YR	WS INV	OP TIME FLT HRS	TOTAL FAILS	TOTAL MA	MTBF EQ HRS	MTBMA EQ HRS	3 MO EMTBF	3 MO EMTBMA	% FAILS	% SH REPS	% NRTS	MAINT INDEX	ABORTS	CONDS	MTBF FL HRS
78SEP	646	12969	15	25	1331.5	798.9	1971.1	1035.7	60	60	0	.01	0	0	864.6
78AUG	644	14407	9	19	2465.2	1167.7	1849.7	998.2	47	79	5	.01	0	0	1600.8
78JUL	628	12302	7	15	2706.4	1263.0	1302.5	755.8	47	73	20	.01	0	0	1757.4
78JUN	665	14128	18	29	1208.7	750.2	1154.4	633.8	62	38	0	.01	0	0	784.9
78MAY	662	13321	22	37	932.5	554.4	1109.0	564.1	59	35	0	.01	0	0	605.5
78APR	682	14530	16	36	1398.5	621.6	1114.1	494.2	44	50	0	.01	0	0	908.1
78MAR	690	14636	21	43	1073.3	524.2	907.5	427.5	49	51	0	.01	0	0	697.0
78FEB	676	10624	18	45	908.9	363.6	1044.1	473.8	40	38	0	.02	0	0	590.2
78JAN	694	13044	26	50	772.6	401.8	1244.0	634.4	52	48	0	.02	0	0	501.7
77DEC	670	12944	10	24	1993.4	830.6	1559.1	713.8	42	75	4	.01	0	0	1294.4
77NOV	659	15208	15	26	1561.4	900.8	1351.6	620.7	58	73	0	.01	0	0	1013.9
77OCT	564	10320	13	33	1222.5	481.6	1412.0	578.3	39	58	0	.02	0	0	793.8
TOTAL	657	158433	190	382	1284.1	638.7			50	53	1	.01	0	0	833.9

DIRECT RADAR SCOPE RECORDING SYSTEM

DRCD STUDY FIELD DATA ANALYSIS SUMMARY

WEAPON SYSTEM E   OP CMND TAC
EQ NO 51   QPA=1   EH/FH=1.54
EQ FUNCTION   RECONN
EQ IDENT WUC 77J2M   LRU 15   EQ DESCR: FILTER ASSY

DATA WINDOW - 12 MONTHS
PERIOD ENDING - SEP78

DATE PROCESSED 02/17/79

MONTH YR	WS INV	OP TIME FLT HRS	TOTAL FAILS	TOTAL MA	MTBF EQ HRS	MTBMA EQ HRS	3 MO EMTBF	3 MO EMTBMA	% FAILS	% SH REPS	% NRTS	MAINT INDEX	ABORTS	CONDS	MTBF FL HRS
78SEP	646	12969	1	1	19972.3	19972.3	10184.0	8729.2	100	0	0	.00	0	0	12969.0
78AUG	644	14407	3	4	7395.6	5546.7	12577.8	10481.5	75	0	0	.00	0	0	4802.3
78JUL	628	12302	2	2	9472.5	9472.5	30608.3	30608.3	100	0	0	.00	0	0	6151.0
78JUN	665	14128	0	0			32323.8	21549.2				.00	0	0	
78MAY	662	13321	0	0			32715.0	21810.0				.00	0	0	
78APR	682	14530	2	3	11188.1	7458.7	10212.8	8753.8	67	0	0	.00	0	0	7265.0
78MAR	690	14636	0	0			14747.0	14747.0				.00	0	0	
78FEB	676	10624	4	4	4090.2	4090.2	9397.1	8054.6	100	0	0	.00	0	0	2656.0
78JAN	694	13044	0	0			21147.3	15860.5				.00	0	0	
77DEC	670	12944	2	3	9966.9	6644.6	19749.0	11849.4	67	0	0	.00	0	0	6472.0
77NOV	659	15208	1	1	23420.3	23420.3	60823.8	15206.0	100	0	0	.00	0	0	15208.0
77OCT	564	10320	0	1		15892.8		15175.4	0	0	0	.00	0	0	
TOTAL	657	158433	15	19	16265.8	12841.4			79	5	0	.00	0	0	10562.2

DIRECT RADAR SCOPE RECORDING SYSTEM

DRCD STUDY FIELD DATA ANALYSIS SUMMARY

WEAPON SYSTEM E   OP CMND TAC
EQ NO 51   QPA=1   EH/FH=1.54
EQ FUNCTION   RECONN
EQ IDENT WUC 77JXX   LRU 0X   EQ DESCR: DRSR S/S

DATA WINDOW - 12 MONTHS
PERIOD ENDING - SEP78

DATE PROCESSED 02/17/79

MONTH YR	WS INV	OP TIME FLT HRS	TOTAL FAILS	TOTAL MA	MTBF EQ HRS	MTBMA EQ HRS	3 MO EMTBF	3 MO EMTBMA	% FAILS	% SH REPS	% NRTS	MAINT INDEX	ABORTS	CONDS	MTBF FL HRS
78SEP	646	12969	28	43	713.3	464.5	710.5	430.3	65	56	0	.02	0	0	463.2
78AUG	644	14407	27	44	821.7	504.2	676.2	398.0	61	70	2	.02	0	0	533.6
78JUL	628	12302	31	55	611.1	344.5	541.7	336.4	56	47	9	.02	0	0	396.8
78JUN	665	14128	35	59	621.6	368.8	529.9	318.5	59	41	0	.02	0	0	403.7
78MAY	662	13321	47	68	436.5	301.7	507.2	294.7	69	38	0	.02	0	0	283.4
78APR	682	14530	40	76	559.4	294.4	475.0	247.1	53	50	1	.02	0	0	363.3
78MAR	690	14636	42	78	536.7	289.0	440.2	230.4	54	53	0	.03	0	0	348.5
78FEB	676	10624	47	94	348.1	174.1	447.5	235.9	50	38	0	.04	0	0	226.0
78JAN	694	13044	45	84	446.4	239.1	592.9	335.7	54	51	0	.03	0	0	289.9
77DEC	670	12944	34	61	586.3	326.9	558.3	344.5	56	61	2	.02	0	0	380.7
77NOV	659	15208	28	44	836.4	532.3	691.2	345.6	64	73	0	.02	0	0	543.1
77OCT	564	10320	28	67	567.6	237.2	674.6	278.5	42	72	0	.03	0	0	368.6
TOTAL	657	158433	432	773	564.8	315.6			56	53	1	.02	0	0	366.7

AN/APQ-130

DRCD STUDY FIFLD DATA ANALYSIS SUMMARY

WEAPON SYSTEM N   OP CMND TAC   DATA WINDOW - 12 MONTHS
EQ NO 07   QPA=1   EH/FH=2.31   PERIOD ENDING - SEP78
EQ FUNCTION RADAR FC
EQ IDENT WUC 73P00 LRU 00 EQ DESCR: FC RADAR SYS   DATE PROCESSED 02/17/79

MONTH YR	WS INV	OP TIME FLT HRS	TOTAL FAILS	TOTAL MA	MTBF EQ HRS	MTBMA EQ HRS	3 MO EMTBF	3 MO EMTBMA	% FAILS	% SH REPS	% NRTS	MAINT INDEX	ABORTS	CONDS	MTBF FL HRS
78SEP	89	1637	19	61	199.0	62.0	148.2	65.9	31	0	0	.27	0	0	86.2
78AUG	89	1663	28	51	137.2	75.3	135.9	64.7	55	0	0	.12	0	0	59.4
78JUL	88	1639	30	61	126.2	62.1	152.9	63.1	49	0	0	.23	0	0	54.6
78JUN	87	1463	23	58	146.9	58.3	145.4	53.2	40	0	2	.15	0	0	63.6
78MAY	82	1267	13	41	225.1	71.4	154.0	52.8	32	0	0	.14	0	0	97.5
78APR	90	355	13	35	63.1	23.4	138.1	46.7	37	0	0	.44	0	0	27.3
78MAR	88	1512	21	61	166.3	57.3	160.0	55.2	34	0	0	.16	0	0	72.0
78FEB	90	763	10	34	176.3	51.8	133.3	49.5	29	0	0	.33	0	0	76.3
78JAN	67	427	8	18	123.3	54.8	162.6	68.9	44	0	0	.25	0	0	53.4
77DEC	88	1061	21	53	116.7	46.2	221.6	76.6	40	0	0	.43	1	0	50.5
77NOV	88	1821	18	40	233.7	105.2	347.2	105.7	45	0	0	.12	0	0	101.2
77OCT	88	1531	7	40	505.2	89.4	451.7	110.9	18	0	0	.16	0	0	218.7
TOTAL	86	15139	211	553	165.7	63.2			38	0	0	.20	1	0	71.7

AN/APQ-130

DRCD STUDY FIELD DATA ANALYSIS SUMMARY

WEAPON SYSTEM N   OP CMND TAC   DATA WINDOW - 12 MONTHS
EQ NO 07   QPA=1   EH/FH=2.31   PERIOD ENDING - SEP78
EQ FUNCTION RADAR FC
EQ IDENT WUC 73PA0 LRU 11 EQ DESCR: ANT UNIT   DATE PROCESSED 02/17/79

MONTH YR	WS INV	OP TIME FLT HRS	TOTAL FAILS	TOTAL MA	MTBF EQ HRS	MTBMA EQ HRS	3 MO EMTBF	3 MO EMTBMA	% FAILS	% SH REPS	% NRTS	MAINT INDEX	ABORTS	CONDS	MTBF FL HRS
78SEP	89	1637	7	13	540.2	290.9	316.9	248.0	54	123	0	.31	0	0	233.9
78AUG	89	1663	16	17	240.1	226.0	196.6	172.0	94	118	6	.26	0	0	103.9
78JUL	88	1639	13	16	291.2	236.6	165.4	136.4	81	250	0	.63	1	0	126.1
78JUN	87	1463	27	31	125.2	109.0	120.8	99.0	87	48	0	.29	0	0	54.2
78MAY	82	1267	21	27	139.4	108.4	185.6	144.8	78	89	0	.54	0	0	60.3
78APR	90	355	11	14	74.5	58.6	202.5	168.8	79	164	0	1.37	0	0	32.3
78MAR	88	1512	7	9	499.0	389.1	208.1	189.1	78	89	0	.13	0	0	216.0
78FEB	90	763	12	13	146.9	135.6	118.2	106.1	92	185	8	.81	0	0	63.6
78JAN	67	427	11	11	89.7	89.7	131.8	117.6	100	55	0	.59	0	0	38.8
77DEC	88	1061	21	25	116.7	98.0	156.8	137.8	84	160	0	.91	0	0	50.5
77NOV	88	1821	26	29	161.8	145.1	213.2	196.0	90	59	0	.21	0	0	70.0
77OCT	88	1531	18	20	196.5	176.8	239.2	203.3	90	275	5	.57	1	0	85.1
TOTAL	86	15139	190	225	184.1	155.4			84	128	1	.45	2	0	79.7

AN/APQ-130

DRCD STUDY FIELD DATA ANALYSIS SUMMARY

WEAPON SYSTEM N   OP CMND TAC
EQ NO 07   QPA=1   EH/FH=2.31
EQ FUNCTION   RADAR FC
EQ IDENT WUC 73PB0   LRU 12   EQ DESCR: FL PROCESSOR

DATA WINDOW - 12 MONTHS
PERIOD ENDING - SEP78

DATE PROCESSED 02/17/79

MONTH YR	WS INV	OP TIME FLT HRS	TOTAL FAILS	TOTAL MA	MTBF EQ HRS	MTBMA EQ HRS	3 MO EMTBF	3 MO EMTBMA	% FAILS	% SH REPS	% NRTS	MAINT INDEX	ABORTS	CONDS	MTBF FL HRS
78SEP	89	1637	14	27	270.1	140.1	203.7	114.1	52	141	4	.52	0	0	116.9
78AUG	89	1663	20	32	192.1	120.0	144.8	92.5	63	122	13	.42	1	0	83.1
78JUL	88	1639	22	41	172.1	92.3	117.4	74.2	54	102	7	.59	0	0	74.5
78JUN	87	1463	34	46	99.4	73.5	79.2	56.6	74	39	7	.41	0	0	43.0
78MAY	82	1267	30	49	97.6	59.7	83.2	64.1	61	55	2	.75	2	0	42.2
78APR	90	355	26	31	31.5	26.5	72.3	56.8	84	110	6	1.85	0	0	13.7
78MAR	88	1512	31	33	112.7	105.8	87.9	65.7	94	45	0	.31	0	0	48.8
78FEB	90	763	27	43	65.3	41.0	56.5	38.5	63	81	0	1.02	0	0	28.3
78JAN	67	427	13	17	75.9	51.9	81.3	54.6	68	74	5	.82	0	0	32.8
77DEC	88	1061	52	73	47.1	33.6	91.0	61.8	71	116	10	1.51	0	0	20.4
77NOV	88	1821	29	48	145.1	87.6	148.2	98.8	60	60	2	.30	0	0	62.8
77OCT	48	1531	31	44	114.1	80.4	141.8	95.3	70	73	2	.78	1	0	49.4
TOTAL	86	15139	329	486	106.3	72.0			68	84	5	.64	4	0	46.0

AN/APQ-130

DRCD STUDY FIELD DATA ANALYSIS SUMMARY

WEAPON SYSTEM N   OP CMND TAC
EQ NO 07   QPA=1   EH/FH=2.31
EQ FUNCTION   RADAR FC
EQ IDENT WUC 73PD0   LRU 13   EQ DESCR: XMTR

DATA WINDOW - 12 MONTHS
PERIOD ENDING - SEP78

DATE PROCESSED 02/17/79

MONTH YR	WS INV	OP TIME FLT HRS	TOTAL FAILS	TOTAL MA	MTBF EQ HRS	MTBMA EQ HRS	3 MO EMTBF	3 MO EMTBMA	% FAILS	% SH REPS	% NRTS	MAINT INDEX	ABORTS	CONDS	MTBF FL HRS
78SEP	89	1637	21	33	180.1	114.6	144.4	101.9	64	103	12	.33	0	0	78.0
78AUG	89	1663	34	49	113.0	78.4	132.6	101.0	69	57	16	.31	0	0	48.9
78JUL	88	1639	24	30	157.8	126.2	146.3	118.7	80	120	20	.35	0	0	68.3
78JUN	87	1463	25	30	135.2	112.7	120.8	91.4	83	33	0	.16	0	0	58.5
78MAY	92	1267	20	25	146.3	117.1	124.8	92.8	80	120	12	.27	0	0	63.3
78APR	90	355	14	23	58.6	35.7	94.9	69.0	61	126	17	1.51	0	0	25.4
78MAR	88	1512	24	30	145.5	116.4	109.5	81.1	80	47	10	.28	0	0	63.0
78FEB	90	763	26	35	67.8	50.4	74.3	52.0	74	83	9	.86	1	0	29.3
78JAN	67	427	7	12	140.9	82.2	101.9	74.2	56	108	0	.59	0	0	61.0
77DEC	88	1061	37	53	66.2	46.2	98.0	78.4	70	158	45	1.59	1	0	28.7
77NOV	88	1821	31	38	135.7	110.7	142.9	124.0	82	150	39	.31	2	0	58.7
77OCT	88	1531	36	39	98.2	90.7	141.8	118.4	92	110	18	.76	0	0	42.5
TOTAL	86	15139	299	397	117.0	88.1			75	103	19	.49	4	0	50.6

AN/APQ-130

DRCD STUDY FIELD DATA ANALYSIS SUMMARY

WEAPON SYSTEM N OP CMND TAC — DATA WINDOW - 12 MONTHS — PAGE 22
EQ NO 07 QPA=1 EH/FH=2.31 — PERIOD ENDING - SEP78
EQ FUNCTION RADAR FC
EQ IDENT WUC 73PF0 LRU 14 EQ DESCR: DOPPLER CONV — DATE PROCESSED 02/17/79

MONTH YR	WS INV	OP TIME FLT HRS	TOTAL FAILS	TOTAL MA	MTBF EQ HRS	MTBMA EQ HRS	3 MO EMTBF	3 MO EMTBMA	% FAILS	% SH REPS	% NRTS	MAINT INDEX	ABORTS	CONDS	MTBF FL HRS
78SEP	89	1637	3	6	1260.5	630.2	760.6	438.8	50	83	17	.04	0	0	545.7
78AUG	89	1663	7	11	548.8	349.2	550.4	379.6	64	36	9	.06	0	0	237.6
78JUL	88	1639	5	9	757.2	420.7	630.8	438.8	56	44	0	.05	0	0	327.8
78JUN	87	1463	8	9	422.4	375.5	593.9	323.9	89	78	0	.10	0	0	182.9
78MAY	82	1267	3	5	975.6	585.4	804.4	362.0	60	100	0	.06	0	0	422.3
78APR	90	355	1	8	820.0	102.5	379.7	217.0	13	63	0	.43	0	0	355.0
78MAR	88	1512	5	7	698.5	499.0	390.1	283.7	71	0	0	.03	0	0	302.4
78FEB	90	763	10	13	176.3	135.6	247.6	173.3	77	85	0	.21	0	0	76.3
78JAN	67	427	1	2	986.4	493.2	402.3	263.6	50	0	0	.02	0	0	427.0
77DEC	88	1061	10	15	245.1	163.4	407.8	283.2	67	100	0	.15	0	0	106.1
77NOV	88	1821	8	12	525.8	350.5	639.5	467.3	67	25	0	.05	0	0	227.6
77OCT	88	1531	7	9	505.2	393.0	641.9	404.6	78	78	0	.10	0	0	218.7
TOTAL	86	15139	68	106	514.3	329.9			64	62	2	.08	0	0	222.6

AN/APQ-130

DRCD STUDY FIELD DATA ANALYSIS SUMMARY

WEAPON SYSTEM N OP CMND TAC — DATA WINDOW - 12 MONTHS
EQ NO 07 QPA=1 EH/FH=2.31 — PERIOD ENDING - SEP78
EQ FUNCTION RADAR FC
EQ IDENT WUC 73PH0 LRU 15 EQ DESCR: LV POW SUPP — DATE PROCESSED 02/17/79

MONTH YR	WS INV	OP TIME FLT HRS	TOTAL FAILS	TOTAL MA	MTBF EQ HRS	MTBMA EQ HRS	3 MO EMTBF	3 MO EMTBMA	% FAILS	% SH REPS	% NRTS	MAINT INDEX	ABORTS	CONDS	MTBF FL HRS
78SEP	89	1637	3	6	1260.5	630.2	814.9	496.0	50	250	117	.05	1	0	545.7
78AUG	89	1663	5	7	768.3	548.8	611.5	425.4	71	0	100	.03	1	0	332.6
78JUL	88	1639	6	10	631.0	378.6	672.8	420.5	60	30	60	.12	1	0	273.2
78JUN	87	1463	7	9	482.8	375.5	647.8	285.1	78	22	0	.06	0	0	209.0
78MAY	82	1267	2	5	1463.4	585.4	804.4	314.8	40	180	0	.08	0	0	633.5
78APR	90	355	2	11	410.0	74.5	433.9	243.0	18	27	0	.28	0	0	177.5
78MAR	88	1512	5	7	698.5	499.0	480.1	390.1	71	71	0	.06	0	0	302.4
78FEB	90	763	7	7	251.8	251.8	305.9	226.1	100	14	0	.08	0	0	109.0
78JAN	67	427	1	2	986.4	493.2	449.6	238.9	50	0	0	.04	0	0	427.0
77DEC	88	1061	9	14	272.3	175.1	443.2	261.4	64	129	14	.27	0	0	117.9
77NOV	88	1821	7	16	600.9	262.9	714.7	433.9	44	13	6	.07	0	0	260.1
77OCT	88	1531	7	9	505.2	393.0	938.2	677.6	78	67	0	.15	0	0	218.7
TOTAL	86	15139	61	103	573.3	339.5			59	62	22	.09	3	0	248.2

AN/APQ-130

DRCD STUDY FIELD DATA ANALYSIS SUMMARY

WEAPON SYSTEM N OP CMND TAC
EQ NO 07 QPA=1 EH/FH=2.31
EQ FUNCTION RADAR FC
EQ IDENT WUC 73PK0 LRU 16 EQ DESCR: RECEIVER

DATA WINDOW - 12 MONTHS
PERIOD ENDING - SEP78

DATE PROCESSED 02/17/79

MONTH YR	WS INV	OP TIME FLT HRS	TOTAL FAILS	TOTAL MA	MTBF EQ HRS	MTBMA EQ HRS	3 MO EMTBF	3 MO EMTBMA	% FAILS	% SH REPS	% NRTS	MAINT INDEX	ABORTS	CONDS	MTBF FL HRS
78SEP	89	1637	9	13	420.2	290.9	368.0	265.3	69	215	0	.23	1	0	181.9
78AUG	89	1663	12	17	320.1	226.0	289.7	220.1	71	76	0	.17	0	0	138.6
78JUL	88	1639	10	13	378.6	291.2	265.6	210.3	77	192	8	.30	0	0	163.9
78JUN	87	1463	16	20	211.2	169.0	165.7	142.5	80	20	0	.15	0	0	91.4
78MAY	82	1267	12	15	243.9	195.1	150.8	134.1	80	113	0	.21	1	0	105.6
78APR	90	355	15	15	54.7	54.7	116.8	99.6	100	133	7	.79	0	0	23.7
78MAR	88	1512	21	24	166.3	145.5	138.7	113.5	87	42	0	.18	1	0	72.0
78FEB	90	763	16	22	110.2	80.1	113.0	89.7	73	77	0	.49	0	0	47.7
78JAN	67	427	8	9	123.3	109.6	156.0	136.5	89	89	0	.30	0	0	53.4
77DEC	88	1061	22	27	111.4	90.8	192.3	159.3	81	156	4	.74	0	0	48.2
77NOV	88	1821	19	20	221.4	210.3	311.6	258.5	95	65	5	.16	0	0	95.8
77OCT	88	1531	12	17	294.7	208.0	338.8	243.9	71	118	6	.24	0	0	127.6
TOTAL	86	15139	172	212	203.3	165.0			81	102	2	.27	3	0	88.0

AN/APQ-130

DRCD STUDY FIELD DATA ANALYSIS SUMMARY

WEAPON SYSTEM N OP CMND TAC
EQ NO 07 QPA=1 EH/FH=2.31
EQ FUNCTION RADAR FC
EQ IDENT WUC 73PM0 LRU 17 EQ DESCR: REF SIG GEN

DATA WINDOW - 12 MONTHS
PERIOD ENDING - SEP78

DATE PROCESSED 02/17/79

MONTH YR	WS INV	OP TIME FLT HRS	TOTAL FAILS	TOTAL MA	MTBF EQ HRS	MTBMA EQ HRS	3 MO EMTBF	3 MO EMTBMA	% FAILS	% SH REPS	% NRTS	MAINT INDEX	ABORTS	CONDS	MTBF FL HRS
78SEP	89	1637	10	13	378.1	290.9	393.4	259.3	77	162	0	.16	0	0	163.7
78AUG	89	1663	14	23	274.4	167.0	355.1	244.6	61	113	4	.20	0	0	118.8
78JUL	88	1639	5	8	757.2	473.3	325.6	265.6	63	138	0	.18	0	0	327.8
78JUN	87	1463	12	14	281.6	241.4	215.9	173.8	86	71	7	.10	1	0	121.9
78MAY	82	1267	14	16	209.1	182.9	226.2	168.4	88	81	0	.17	0	0	90.5
78APR	90	355	7	11	117.1	74.5	253.1	151.9	64	118	9	.45	0	0	50.7
78MAR	88	1512	11	16	317.5	218.3	328.5	173.4	69	25	0	.06	0	0	137.5
78FEB	90	763	6	13	293.8	135.6	179.3	102.0	46	85	0	.19	0	0	127.2
78JAN	67	427	2	7	493.2	140.9	212.3	136.5	29	14	0	.14	0	0	213.5
77DEC	88	1061	21	31	116.7	79.1	212.4	152.1	68	187	0	.39	0	0	50.5
77NOV	88	1821	13	18	323.6	233.7	303.8	248.0	72	67	0	.12	0	0	140.1
77OCT	88	1531	14	18	252.6	196.5	312.7	243.9	78	78	0	.16	1	0	109.4
TOTAL	86	15139	129	188	271.1	186.0			69	103	2	.17	2	0	117.4

AN/APQ-130

DRCD STUDY FIELD DATA ANALYSIS SUMMARY

WEAPON SYSTEM N   OP CMND TAC   DATA WINDOW - 12 MONTHS   PAGE 24
EQ NO 07   QPA=1   EH/FH=2.31   PERIOD ENDING - SEP78
EQ FUNCTION   RADAR FC
EQ IDENT WUC 73PP0   LRU 18   EQ DESCR: ANT PEDESTAL   DATE PROCESSED 02/17/79

MONTH YR	WS INV	OP TIME FLT HRS	TOTAL FAILS	TOTAL MA	MTBF EQ HRS	MTBMA EQ HRS	3 MO EMTBF	3 MO EMTBMA	% FAILS	% SH REPS	% NRTS	MAINT INDEX	ABORTS	CONDS	MTBF FL HRS
78SEP	89	1637	2	5	1890.7	756.3	760.6	475.4	40	40	40	.03	0	0	818.5
78AUG	89	1663	6	8	640.3	480.2	687.9	458.6	75	13	25	.06	0	0	277.2
78JUL	88	1639	7	11	540.9	344.2	917.5	531.2	64	91	0	.09	0	0	234.1
78JUN	87	1463	3	5	1126.5	675.9	1018.0	548.2	60	20	0	.02	0	0	487.7
78MAY	82	1267	1	3	2926.8	975.6	724.0	482.6	33	67	33	.04	0	1	1267.0
78APR	90	355	3	5	273.3	164.0	506.3	379.7	60	100	0	.13	0	0	118.3
78MAR	88	1512	6	7	582.1	499.0	520.1	390.1	86	57	43	.11	0	0	252.0
78FEB	90	763	3	4	587.5	440.6	577.8	400.0	75	150	0	.13	0	0	254.3
78JAN	67	427	3	5	328.8	197.3	764.4	509.6	60	20	40	.13	0	0	142.3
77DEC	88	1061	3	4	817.0	612.7	1274.3	849.5	75	175	75	.11	0	0	353.7
77NOV	88	1821	4	6	1051.6	701.1	1518.8	1012.5	67	0	0	.03	0	2	455.3
77OCT	88	1531	1	2	3536.6	1768.3	1219.7	813.1	50	0	50	.05	0	2	1531.0
TOTAL	86	15139	42	65	832.6	538.0			65	60	22	.07	0	5	360.5

AN/APQ-130

DRCD STUDY FIELD DATA ANALYSIS SUMMARY

WEAPON SYSTEM N   OP CMND TAC   DATA WINDOW - 12 MONTHS
EQ NO 07   QPA=1   EH/FH=2.31   PERIOD ENDING - SEP78
EQ FUNCTION   RADAR FC
EQ IDENT WUC 73PQ0   LRU 19   EQ DESCR: MOUNT   DATE PROCESSED 02/17/79

MONTH YR	WS INV	OP TIME FLT HRS	TOTAL FAILS	TOTAL MA	MTBF EQ HRS	MTBMA EQ HRS	3 MO EMTBF	3 MO EMTBMA	% FAILS	% SH REPS	% NRTS	MAINT INDEX	ABORTS	CONDS	MTBF FL HRS
78SEP	89	1637	2	12	1890.7	315.1	2852.3	285.2	17	0	8	.04	0	0	818.5
78AUG	89	1663	2	19	1920.8	202.2	5503.6	305.8	11	16	0	.05	0	0	831.5
78JUL	88	1639	0	9		420.7		480.6	0	33	0	.04	0	0	
78JUN	87	1463	0	8		422.4		475.1	0	13	0	.03	0	0	
78MAY	82	1267	0	4		731.7		556.9	0	25	0	.01	0	0	
78APR	90	355	0	3		273.3	6075.3	357.4	0	0	0	.04	0	0	
78MAR	88	1512	0	6		582.1	6241.6	312.1	0	0	0	.01	0	0	
78FEB	90	763	1	8	1762.5	220.3	1040.0	162.5	13	50	0	.08	0	0	763.0
78JAN	67	427	0	6		164.4	1526.8	231.6	0	0	0	.05	0	0	
77DEC	88	1061	4	18	612.7	136.2	1699.0	268.3	22	0	0	.07	0	0	265.3
77NOV	88	1821	1	9	4206.5	467.4	3037.6	419.0	11	11	11	.02	0	0	1821.0
77OCT	88	1531	1	11	3536.6	321.5	2032.8	348.5	9	9	0	.03	0	0	1531.0
TOTAL	86	15139	11	113	3179.2	309.5			10	12	2	.04	0	0	1376.3

AN/APQ-130

DRCD STUDY FIELD DATA ANALYSIS SUMMARY

WEAPON SYSTEM N   OP CMND TAC   DATA WINDOW - 12 MONTHS   PAGE 25
EQ NO 07   QPA=1   EH/FH=2.31   PERIOD ENDING - SEP78
EQ FUNCTION   RADAR FC
EQ IDENT WUC 73PXX   LRU 0X   EQ DESCR: FC RADAR S/S   DATE PROCESSED 02/17/79

MONTH YR	WS INV	OP TIME FLT HRS	TOTAL FAILS	TOTAL MA	MTBF EQ HRS	MTBMA EQ HRS	3 MO EMTBF	3 MO EMTBMA	% FAILS	% SH REPS	% NRTS	MAINT INDEX	ABORTS	CONDS	MTBF FL HRS
78SEP	89	1637	100	193	37.8	19.6	29.9	17.6	52	100	44	2.10	2	0	16.4
78AUG	89	1663	151	240	25.4	16.0	24.8	15.9	63	58	47	1.85	2	0	11.0
78JUL	88	1639	131	216	28.9	17.5	24.4	15.6	61	86	51	2.75	2	0	12.5
78JUN	87	1463	162	235	20.9	14.4	18.8	12.0	69	31	49	1.59	1	0	9.0
78MAY	82	1267	121	195	24.2	15.0	20.5	12.9	62	71	41	2.53	3	1	10.5
78APR	90	355	97	163	8.5	5.0	16.8	10.7	60	65	119	8.80	0	0	3.7
78MAR	88	1512	136	203	25.7	17.2	19.4	12.5	67	30	42	1.41	1	0	11.1
78FEB	90	763	129	200	13.7	8.8	13.3	8.4	65	77	79	4.56	2	0	5.9
78JAN	67	427	56	95	17.6	10.4	18.0	11.6	59	47	48	3.20	0	0	7.6
77DEC	88	1061	205	323	12.0	7.6	20.1	13.2	63	111	104	6.56	2	0	5.2
77NOV	88	1821	163	240	25.8	17.5	30.3	20.2	68	57	64	1.46	2	2	11.2
77OCT	88	1531	139	212	25.4	16.7	31.2	19.8	66	85	73	3.12	3	2	11.0
TOTAL	86	15139	1590	2515	22.0	13.9			63	72	65	2.71	20	5	9.5

STRIKE CAMERA

DRCD STUDY FIELD DATA ANALYSIS SUMMARY

WEAPON SYSTEM N   OP CMND TAC   DATA WINDOW - 12 MONTHS
EQ NO 50   QPA=1   EH/FH=1.19   PERIOD ENDING - SEP78
EQ FUNCTION   RECONN
EQ IDENT WUC 77A00   LRU 00   EQ DESCR: STR CAM SYS   DATE PROCESSED 02/17/79

MONTH YR	WS INV	OP TIME FLT HRS	TOTAL FAILS	TOTAL MA	MTBF EQ HRS	MTBMA EQ HRS	3 MO EMTBF	3 MO EMTBMA	% FAILS	% SH REPS	% NRTS	MAINT INDEX	ABORTS	CONDS	MTBF FL HRS
78SEP	99	1637	0	2		974.0		2938.7	0	0	0	.00	0	0	
78AUG	89	1663	0	0				5670.3				.00	0	0	
78JUL	88	1639	0	0				5199.1				.00	0	0	
78JUN	87	1463	0	1		1741.0		1835.6	0	0	0	.01	0	0	
78MAY	82	1267	0	0				414.4				.00	0	0	
78APR	90	355	0	1		422.4		313.0	0	0	0	.00	0	0	
78MAR	88	1512	0	8		224.9		321.5	0	0	0	.01	0	0	
78FEB	90	763	0	1		908.0	2678.7	669.7	0	0	0	.00	0	0	
78JAN	67	427	0	1		508.1	3937.7	1312.6	0	0	0	.00	0	0	
77DEC	88	1061	1	2	1262.6	631.3	5251.5	1312.9	50	0	0	.00	0	0	1061.0
77NOV	88	1821	0	0				1251.9				.00	0	0	
77OCT	88	1531	0	2		910.9		1256.6	0	0	0	.00	0	0	
TOTAL	86	15139	1	18	18015.4	1000.9			6	0	0	.00	0	0	15139.0

STRIKE CAMERA

DRCD STUDY FIELD DATA ANALYSIS SUMMARY

WEAPON SYSTEM V   OP CMND TAC
EQ NO 50   QPA=1   EH/FH=1.19
EQ FUNCTION   RECONN
EQ IDENT WUC 77AAA   LRU 11   EQ DESCR: BODY CAMERA

DATA WINDOW - 12 MONTHS
PERIOD ENDING - SEP78

DATE PROCESSED 02/17/79

MONTH YR	WS INV	OP TIME FLT HRS	TOTAL FAILS	TOTAL MA	MTBF EQ HRS	MTBMA EQ HRS	3 MO EMTBF	3 MO EMTBMA	% FAILS	% SH REPS	% NRTS	MAINT INDEX	ABORTS	CONDS	MTBF FL HRS
78SEP	89	1637	0	0			5877.4	145.9				.01	0	0	
78AUG	89	1663	0	16		123.7	5670.3	113.4	0	88	0	.02	0	0	
78JUL	89	1639	1	24	1950.4	81.3	5199.1	144.4	4	75	0	.03	0	0	1639.0
78JUN	87	1463	0	10		174.1		204.0	0	110	0	.02	0	0	
78MAY	82	1267	0	2		753.9		466.2	0	400	0	.03	0	0	
78APR	90	355	0	6		70.4		521.6	0	300	0	.17	0	0	
78MAR	88	1512	0	0				3215.4				.00	0	0	
78FEB	90	763	0	0			2678.7	892.9				.03	0	0	
78JAN	67	427	0	1		508.1	3937.7	1312.6	0	400	0	.04	0	0	
77DEC	88	1061	1	2	1262.6	631.3	2625.7	1750.5	50	900	0	.05	0	0	1061.0
77NOV	88	1821	0	0			3129.7	2086.5				.01	0	0	
77OCT	68	1531	1	1	1821.9	1821.9	3141.6	2094.4	100	0	0	.00	0	0	1531.0
TOTAL	96	15139	3	62	6005.1	290.6			5	187	0	.02	0	0	5046.3

STRIKE CAMERA

DRCD STUDY FIELD DATA ANALYSIS SUMMARY

WEAPON SYSTEM V   OP CMND TAC
EQ NO 50   QPA=1   EH/FH=1.19
EQ FUNCTION   RECONN
EQ IDENT WUC 77AAE   LRU 12   EQ DESCR: STR CAM CONT

DATA WINDOW - 12 MONTHS
PERIOD ENDING - SEP78

DATE PROCESSED 02/17/79

MONTH YR	WS INV	OP TIME FLT HRS	TOTAL FAILS	TOTAL MA	MTBF EQ HRS	MTBMA EQ HRS	3 MO EMTBF	3 MO EMTBMA	% FAILS	% SH REPS	% NRTS	MAINT INDEX	ABORTS	CONDS	MTBF FL HRS
78SEP	89	1637	0	4		487.0		279.9	0	100	0	.01	0	0	
78AUG	89	1663	0	4		494.7		236.3	0	100	0	.01	0	0	
78JUL	88	1639	0	13		150.0		236.3	0	92	8	.05	0	0	
78JUN	87	1463	0	7		248.7		282.4	0	114	0	.05	0	0	
78MAY	82	1267	0	2		753.9		621.6	0	250	0	.02	0	0	
78APR	90	355	0	4		105.6	1564.8	447.1	0	350	0	.13	0	0	
78MAR	88	1512	0	0			1071.8	643.1				.00	0	0	
78FEB	90	763	2	3	454.0	302.7	669.7	334.8	67	33	0	.01	0	0	381.5
78JAN	67	427	1	2	508.1	254.1	1312.6	656.3	50	100	0	.04	0	0	427.0
77DEC	88	1061	1	3	1262.6	420.9	2625.7	1050.3	33	100	0	.04	0	0	1061.0
77NOV	88	1821	1	1	2167.0	2167.0	2086.5	1251.9	100	100	0	.01	0	0	1821.0
77OCT	99	1531	0	1		1821.9	3141.6	1256.6	0	100	0	.00	0	0	
TOTAL	96	15139	5	44	3603.1	409.4			11	127	2	.02	0	0	3027.8

STRIKE CAMERA

DRCD STUDY FIELD DATA ANALYSIS SUMMARY

WEAPON SYSTEM N OP CMND TAC — DATA WINDOW - 12 MONTHS — PAGE 27
EQ NO 50 QPA=1 EH/FH=1.19 — PERIOD ENDING - SEP78
EQ FUNCTION RECONN
EQ IDENT WUC 77AAF LRU 13 EQ DESCR: PANEL ASSY — DATE PROCESSED 02/17/79

MONTH YR	WS INV	OP TIME FLT HRS	TOTAL FAILS	TOTAL MA	MTBF EQ HRS	MTBMA EQ HRS	3 MO EMTBF	3 MO EMTBMA	% FAILS	% SH REPS	% NRTS	MAINT INDEX	ABORTS	CONDS	MTBF FL HRS
78SEP	89	1637	2	3	974.0	649.3	1469.4	979.6	67	100	0	.00	0	0	818.5
78AUG	89	1663	1	1	1979.0	1979.0	1890.1	945.1	100	0	0	.00	0	1	1663.0
78JUL	88	1639	1	2	1950.4	975.2	2599.6	1039.8	50	0	0	.00	0	0	1639.0
78JUN	87	1463	1	3	1741.0	580.3	3671.1	1223.7	33	0	0	.00	0	0	1463.0
78MAY	82	1267	0	0				932.4				.00	0	0	
78APR	90	355	0	0				782.4				.00	0	0	
78MAR	88	1512	0	4		449.8	1607.7	535.9	0	0	0	.00	0	0	
78FEB	90	763	0	0			892.9	535.7				.00	0	0	
78JAN	67	427	2	2	254.1	254.1	1312.6	787.5	100	100	0	.03	0	0	213.5
77DEC	88	1061	1	3	1262.6	420.9	2625.7	1050.3	33	100	0	.02	0	0	1061.0
77NOV	88	1821	0	0			3129.7	1564.8				.00	0	0	
77OCT	88	1531	1	2	1821.9	910.9	2094.4	1256.6	50	100	0	.01	0	0	1531.0
TOTAL	86	15139	9	20	2001.7	900.8			45	60	0	.00	0	1	1682.1

STRIKE CAMERA

DRCD STUDY FIELD DATA ANALYSIS SUMMARY

WEAPON SYSTEM N OP CMND TAC — DATA WINDOW - 12 MONTHS
EQ NO 50 QPA=1 EH/FH=1.19 — PERIOD ENDING - SEP78
EQ FUNCTION RECONN
EQ IDENT WUC 77AXX LRU 0X EQ DESCR: STR CAM S/S — DATE PROCESSED 02/17/79

MONTH YR	WS INV	OP TIME FLT HRS	TOTAL FAILS	TOTAL MA	MTBF EQ HRS	MTBMA EQ HRS	3 MO EMTBF	3 MO EMTBMA	% FAILS	% SH REPS	% NRTS	MAINT INDEX	ABORTS	CONDS	MTBF FL HRS
78SEP	89	1637	3	9	649.3	216.4	979.6	59.4	33	311	0	.02	0	0	545.7
78AUG	89	1663	1	39	1979.0	50.7	945.1	46.9	3	97	0	.06	0	1	1663.0
78JUL	88	1639	2	51	975.2	38.2	1039.8	59.1	4	96	10	.09	0	0	819.5
78JUN	87	1463	3	31	580.3	56.2	1223.7	69.3	10	97	0	.10	0	0	487.7
78MAY	82	1267	0	6		251.3	1864.7	106.6	0	333	17	.06	0	0	
78APR	90	355	0	16		26.4	782.4	94.8	0	294	38	.40	0	0	
78MAR	88	1512	2	13	899.6	138.4	401.9	128.6	15	31	0	.02	0	0	756.0
78FEB	90	763	2	4	454.0	227.0	243.5	121.8	50	300	25	.05	0	0	381.5
78JAN	67	427	4	8	127.0	63.5	393.8	207.2	50	150	13	.13	0	0	106.8
77DEC	88	1061	5	10	252.5	126.3	656.4	308.9	50	380	50	.14	0	0	212.2
77NOV	88	1821	1	1	2167.0	2167.0	894.2	368.2	100	900	300	.03	0	0	1821.0
77OCT	88	1531	2	6	910.9	303.6	897.6	349.1	33	50	0	.01	0	0	765.5
TOTAL	86	15139	25	194	720.6	92.9			13	149	11	.07	0	1	605.6

SECTION III

EQUIPMENT ANALYSIS

F-4E RADAR SCOPE CAMERA SYSTEM

AREA	POSITIVE	QUESTIONABLE	NEGATIVE
General	• Minimal complexity (two LRUs) • BIT features • Simple repair by LRU replacement	• Scheduled maintenance (test, clean, lubricate) is required every 600 flying hours per -6	• Flightline maintenance environment
Accessibility	• Very good (LRUs in cockpit)	• Camera cable is hidden from view (broken cable following scope maintenance is common)	• Camera is mounted on scope and must be removed each time scope maintenance is necessary
AGE of System and Technology	• Solid-state components • No flightline adjustments required	• Late '60s technology • Electro-mechanical components	• Control panel rotary switches
Debriefing	• Comprehensive sortie data logged on TAC form 93		
Depot Support	• Depot support adequate • Depot shop has test/repair capability for LRUs		
Pre, In, Post-flight Inspection	• Accomplished by aircrews • Limited to operational check		• Positive indication of proper operation is not provided
Level of Base Repair	• LRUs are "I" level repairable for most failures (95% est.)	• Frequency control repair authorized in field	

F-4E RADAR SCOPE CAMERA SYSTEM

AREA	POSITIVE	QUESTIONABLE	NEGATIVE
M Characteristics of Equipment Design	• BIT features • Film packs loaded by Kodak • Components are "I" level replaceable • Modularized camera (two LRUs)	• No plug-in modules	• No external indicator is provided to indicate film is advancing when motor power light is on
Maintenance Data Collection Documentation and Feedback System	• Automated data processing • Periodic reports • Special reports as requested	• Accuracy of data recorded	
Maintenance Organization	• Two-level maintenance organization (I-level shop dispatches to flightline for system removal/installation)		
Organizational Level AGE	• No flightline test equipment is required	• "I" level boresighting equipment is not used very often. Optical maintenance should have been authorized for the depot only	
Preventive Maintenance	• Scheduled maintenance (primarily for cleaning/lubrication) does not appear essential to reliable operation of the system		• Scheduled maintenance (check, clean, lubricate per -6). Required system removal from aircraft and LRU disassembly in "I" level shop.
Technical Orders	• T.O.s are adequate		

F4-E RADAR SCOPE CAMERA SYSTEM

AREA	POSITIVE	QUESTIONABLE	NEGATIVE
Training and Personnel Skills Level	• Extensive training is not essential for maintenance of this simple system		
Troubleshooting Methods	• LRUs tested in shop on test set (no substitution in aircraft)		

F-4E TARGET IDENTIFICATION ELECTRO-OPTICAL (TISEO)

AREA	POSITIVE	QUESTIONABLE	NEGATIVE
General	• BIT for some system functions • System repair by LRU replacement	• No preventive maintenance inspections per -6 • Complexity (4 LRUs) slows fault isolation	• Flightline maintenance environment
Accessibility	• LRU-4 very accessible (in cockpit)		• Poor accessibility to LRU-2 for fault isolation and replacement • Panels surrounding LRU-1 are attached with screws having heads requiring a special tool • LRU-3 is located behind panel with 36 fasteners
AGE of System and Technology	• Mid '70s technology • Solid-state components • Plug-in modules in high-failure LRUs	• External cooling air required • Electro-mechanical components	• Flightline adjustments required • Module connectors can be easily damaged • Control panel rotary switches
Debriefing	• Comprehensive sortie data logged on TAC form 93		
Depot Support	• Depot shop has test/repair capability for LRUs and SRUs	• LRUs from depot require realignment by "I" level before aircraft installation	• Inadequate spares are available at "I" level
Pre, In, Post-flight Inspections	• All inspections performed by aircrews • Continuous BIT; status indicator on control panel	• Boresight adjustments on control panel • Extensive operational check required	• Boresight harmonization check/alignment required of aircrew • Low-light operation might damage system

F-4E TARGET IDENTIFICATION ELECTRO-OPTICAL (TISEO)

AREA	POSITIVE	QUESTIONABLE	NEGATIVE
Level of Base Repair	• System repair by LRU replacement on the flight line • LRU repair by SRU replacement		• LRU-1 only 50% repairable at "I" level
M Characteristics of Equipment Design	• Modularized system (four LRUs) • Modularized LRUs (LRU-1, 2) • BIT	• Test connector in cockpit (on control unit) for BIT failure fault isolation • Interface test set for flightline use	• Access for test set hookup to LRU-2 is very limited in aircraft • LRU-2 replacement is difficult
Maintenance Data Collection Documentation and Feedback System	• Automatic data processing • Periodic reports • Special reports as requested	• Accuracy of data recorded	
Maintenance Organization	• CRS personnel assist with aircraft periodic inspections to gain flightline experience on TISEO system		
Organizational Level AGE		• Interface test set is not used often (substitution is normal fault-isolation method)	• Interface test set for flightline use is not used due to poor accessibility to LRU-2 connector
Preventive Maintenance			• Systems installed in aircraft must be realigned periodically to maintain boresight harmonization • LRUs received from depot require alignment prior to aircraft installation

F-4E TARGET IDENTIFICATION ELECTRO-OPTICAL (TISEO)

AREA	POSITIVE	QUESTIONABLE	NEGATIVE
Technical Orders	• T.O.s are considered adequate		
Training and Personnel Skills Level	• Photo technicians in the Photosensor shop are being trained to maintain the TISEO • Photosensor shop personnel assist with the 180 inspection on the aircraft to gain system experience	• AGS flightline maintenance personnel have no shop experience on the TISEO	
Troubleshooting Methods	• Shop personnel are able to fault isolate LRUs using test equipments and T.O.s	• Substitution is used exclusively on the flightline	• Mockup/spare SRUs are not available for substitution purposes

STRIKE CAMERA - KB-18A F-111D

AREA	POSITIVE	QUESTIONABLE	NEGATIVE
General	• Built-in-test • No special maintenance aid • No local modifications		125 minor inspection 500 major inspection
Accessibility	• Access to camera including loadup, removal, replacement requires 15 minutes • Access to control unit including removal/replacement requires 20 minutes • Quick release fittings on access panel to camera • Quick release fitting and snap-lock hinges used to secure camera		• Removal of camera control unit from avionics compartment hampered by pressure of wire bundles
AGE of System and Technology	• Mature system • Quick-disconnect connectors	• Electro-mechanical components • Wiring harnesses/bundles • Plug-in printed circuit cards	• Discrete solid-state components • 10-year old technology • Analog design
Debriefing	• Debriefing performed	• Debriefing necessary	• Very little useful information from a maintenance aspect is provided during debriefing
Depot Support	• Adequate spares provide through component level depot repair		
(Pre, In, Post)—Flight Inspection	• None required		
Level of Base Repair	(O) • Operate BIT • Remove/replace LRU (I) • Component level repair • SRU/LRU repair beyond the capability of I level	(I) • Component and SRU level repair	(O/I) • 125-hour phase inspections

STRIKE CAMERA - KB-18A F-111D

AREA	POSITIVE	QUESTIONABLE	NEGATIVE
Maintainability Characteristics of Equipment Design	• High reliability - >98% over 21 months • Easy access to LRUs • Solid-state design	• Use of photo film instead video tape or similar	• Cable assembly inhibits removal of control unit • BIT/self-test requires two people: One person to activate and monitor BIT at the control unit and one person to visually monitor camera. • LRUs not co-located (included in above) • Camera is not gyro-stabilized • Component parts soldered vice plug-in (i.e., piece parts on printed circuit cards) • Camera test set (LS-83A) is reported to provide erratic readings with or without test set maintenance/ calibration • Problem with alignment of IJ1 connector to camera body during re-assembly after work on drive assembly • Temperature control-heater fan inhibits access to temperature control switch. Removal of fan is necessary.
Maintenance Data Collection Documentation and Feedback System	• Constant review and analysis not required due to high camera system reliability		
Maintenance Organization			

STRIKE CAMERA - KB-18A F-111D

AREA	POSITIVE	QUESTIONABLE	NEGATIVE
Organizational Level AGE	• No maintenance AGE	• Electrical ground power unit required • External air-conditioning unit required	
Preventative Maintenance			• 125-hour phase inspections required
Technical Orders		• Hard copy TOs required • To data 'adequate' to support strike camera system	
Training and Personnel Skills Level			• More attention is needed in manning to rank and skill level • Human factor aspects of equipment/support system design requires revaluation in light of increased integration of female technicians into the maintenance complex • Technician basic system knowledge acquired through OJT
Troubleshooting Methods	(O) Substitution of like item (LRU) based on results of BIT/self-test or operational failure characteristics (I) Test equipment employed (I) Substitution of like item (SRU and component part) (D) Repair LRU/SRUs beyond the capability or scope of I level (D) Repair performed to and including discrete component level	(O) Camera related wiring problems in the aircraft are repaired by electrical vice camera shop personnel	(O) Camera system repair (LRU) may require visual/temporal evaluation of system

RADAR SET AN/APQ-130 F-111D

AREA	POSITIVE	QUESTIONABLE	NEGATIVE
General	• Solid-State circuitry • No radar system inspection requirements • System integrated BIT • BIT verifies fault presence	• Removable equipment rack	• BIT does not identify specific faulty LRU/fault isolation
Accessibility of Avionics	• Major LRUs co-located in same equipment bay • LRUs secured in equipment rack with CALFAX-type quick-release stress panel fasteners	• Rear mounted LRU electrical connectors • Use of jackscrews for LRU electrical connector insertion/extraction	
Age of System and Technology	• Digital system design • *Quick disconnect* connectors at interface	• Highly integrated design • Solder connections • Plug-in LRUs in equipment rack • Wiring harness/bundles employed • Microdot wiring used • Waveguides • Software programming hard-wired into the computer	• Design reflects technology of the mid-to-late 1960s. • Discrete components
Debriefing	• Debriefing conducted • 'Expeditor' used to initiate and monitor corrective maintenance action by AGS for problems identified during debriefing • Avionics history log maintained by AGS	• Debriefing necessary	• Maintenance personnel do not have access to flight crew during debriefing. • Information documented on AFTO 349/350 is not thorough enough to provide necessary visibility required to perform efficient maintenance

RADAR SET AN/APQ-130 F-111D (Continued)

AREA	POSITIVE	QUESTIONABLE	NEGATIVE
Depot Support	• Depot support present	• Two separate depots for AN/APQ-130. One depot for LRUs (Sacramento) and one for SRUs (Warner-Robins)	• Spare support a problem at component, SRU and LRU levels • Less than expected reliability level for the system • Incompatibility between source selection codes and maintenance concept as it relates to LRU and test equipment repair • Functional problems exist during early problem implementation tying up operational unit support spares • Hybrid spares support is a problem due to limited stock and items out-of-production • Test spec incompatibility between field and depot test equipment • SRUs exhibit matched set characteristics within LRUs • Field level maintenance not informed of depot modifications which change field level test specs
(PRE, IN, POST) Flight Inspection	• No inspection requirements • Continuous ARS BIT/self-test performed in-flight		
Level of Base Repair	(ALL) Level of Repair in agreement with maintenace concept (ALL) No scheduled maintenance at any repair level	(O) Troubleshooting necessary (I) Use of a hot mock-up necessary to isolate problem LRU/SRUs that cannot be repaired at the test station (D) Semi-automatic vice automatic test equipment employed for depot repair	(O) Substitution of 'suspected' LRUs necessary due to BIT limitations (O) Pre and post flight troubleshooting using aircraft power in an effort to approximate inflight conditions and increase OR rate

RADAR SET AN/APQ-130 F-111D (Continued)

AREA	POSITIVE	QUESTIONABLE	NEGATIVE
Maintainability Characteristics of Equipment Design	• Solid-state circuitry • Calfax stress panel fasteners for LRU retention • Easy access to LRUs in avionics bay • BIT is effective in identification of fault presence	• Rear-mounted electrical pin connectors • Jackscrews employed for LRU electrical connector insertion/extraction • BIT activated from cockpit • Duplexer (waveguide) present for unused (past and current) mode • Equipment rack removal necessary • Pin replacement in connectors is a common problem due to pin malfunction • Repair of stripped female jackscrews requires drilling out old fitting in inserting and setting a new fitting • Use of wiring sensitive to stressing/vibration/aging • Microdot wiring used • Avionics maintenance personnel can not replace faulty female jackscrew fittings • Ribbon cable used • Electro-mechanical assemblies employed • Electro-hydraulic assemblies employed • Fuzes used vice circuit breakers • Wire cables are used as an interface between LRUs and test equipment	• BIT does not accurately identify problem source (LRU) • BIT limitations provide inadequate flightline fault isolation capability and promote 'shotgun' removals, excessive test time, and induced failures • Video cables to front of EPU are poorly protected. Repeated removal results in wire breaks • Unpredictable environmental dehumidifier saturation prior to scheduled removal resulting in moisture build-up/failures • High maintenance to flight hour ratio (2.3 MMH/FH) • Equipment rack removal difficult • Apparent poor quality pin insertion/extractor tool • Pin replacement in connectors is difficult • Female fitting for LRU jackscrews strip with age/use • Vibration and stressing (aging) of microdot wiring causes intermittant shorts and open circuit failures • Screw-type vice quick-release-type fasteners used to secure LRU panels • Matched waveguides used on antenna mount

RADAR SET AN/APQ-130 F-111D (Continued)

AREA	POSITIVE	QUESTIONABLE	NEGATIVE
Maintainability Characteristics of Equipment Design (continued)		• Maintenance personnel estimate that 50% of maintenance time is employed with problems related to broken wires in connectors and cables at the equipment interface • Technologically obsolescent maintenance equipment used to service the TWT oil cooling system • About 25% of the transmitter maintenance requires violation of the environmental integrity of the TWT oil cooling system to repair oil leaks	• ARS (AN/APQ-130), expecially EPU, is too sensitive to heat and cold • Antenna ranging problems have occurred during periods of extreme cold (winter) • Wire breaks in ribbon cable have occurred where ribbon cable is accessible to or handled by organizational and field level maintenance personnel • Antenna feedhorn position (boresight) extremely sensitive to misalignment due to transportation/handling • Majority of transmitter problems (60-75%) involve blown fuzes • Transmitter fuzes are positioned in such a way (rear) as to make checking/replacement difficult • Maintenance personnel can not access EPU for plug/pin checks when EPU plugged into test station • Cable interface between LRU/test station develop wire breaks and intermittent shorts • Cable interface between LRU/test station sensitive to bending/flexing (such as when storing or making connections)

RADAR SET AN/APQ-130 F-111D (Continued)

AREA	POSITIVE	QUESTIONABLE	NEGATIVE
Maintenance Data Collection Documentation and Feed-Back System	• Maintenance data collection is in accordance with the AFM 66-1 • Constant review and analysis is performed • Feedback information has been effective • ARS personnel maintain an avionics history log by aircraft tail number which describes malfunctions and corrective action	• Effectiveness of feedback information dependent upon the presence of (need for) a qualified analyst • Avionics history log required or necessary	• MDCS required to perform effective maintenance/troubleshooting
Maintenance Organization			
Organizational Level AGE	• Required AGE is available	• AGE required	• AGE, while required and available, is not generally used • AGE for transmitter (AGERD 6689 fixture) must be used in conjunction with an MJ-4 lift truck
Preventative Maintenance	• No PM schedule for the AN/APQ-130 radar		

RADAR SET AN/APQ-130 F-111D (Continued)

AREA	POSITIVE	QUESTIONABLE	NEGATIVE
Technical Orders	• Technical orders provide good functional and system interface description	• Hard copy technical orders required	• Poor technical order description regarding test points • Insufficient technical data to trace signals • Multiple technical orders frequently required for troubleshooting
Training and Personnel Skill Level	• 'Authorized' skill requirements adequate to meet maintenance concept • Basic training on APQ-130 is adequate	• APQ-130 system experience biggest asset in making effective repairs	• Equipment/support system design does not reflect re-evaluation of human factors in light of integration of female technicians into the maintenance complex
Troubleshooting Methods	(O) BIT single and sequence mode tests (O) BIT used for identification of problem presence (D) Functional testing/verification of all returned/repaired LRUs	(O) High level of system integration (I) Hot mock-up used to screen and solve problem not resolved by the test station (I) Semi-automatic test equipment (I) Central computer processing employed with test stations (time-sharing) (D) Manual probing required to isolate faulty discrete components	(O) BIT ineffective in identification of problem source (faulty LRU). Replacement of BIT indicated faulty LRU frequently fails to resolve problem (O) Erroneous/spurreous BIT indications require temporal analysis (I) Maintenance personnel have extremely low confidence level in 'I' level test station (RTM) (I) A significant amount of manual testings is performed at the 'I' level (I) LRU functional layout requires 'jumping around' to different SRUs to troubleshoot a signal path

C-5A AN/ARC-109 RADIO

AREA	POSITIVE	QUESTIONABLE	NEGATIVE
General	• Redundant radio sets (two per aircraft) • Low complexity (two LRUs per set) • Ease of repair (LRU replacement) • Benign maintenance environment • BIT features	• No preventive maintenance inspections per -6	
Accessibility	• Console mounting in cockpit of control unit • Rack mounting in avionics compartment on flight deck of R/T unit		
AGE of System and Technology	• Solid-state components • Plug-in modules (R/T unit only) • Front panel thumbwheel switches	• Early '70s technology • Electro-mechanical channel selector • Non-modularized control unit	• Cooling air for R/T unit is required • Sealed and pressurized R/T unit case • Front panel rotary switches
Debriefing	• Comprehensive sortie data logged on MAC form 278	• Limited/inaccurate malfunction description is relayed to maintenance shop	
Depot Support	• Depot shop has test/repair capability for LRUs/SRUs • Depot shop has same equipment as field shops	• SRU repair authorized at "I" level	
Pre, In, Post-flight Inspections	• Performed by aircrew • Limited to operational check		

C-5A AN/ARC-109 RADIO

AREA	POSITIVE	QUESTIONABLE	NEGATIVE
Level of Base Repair	• System repair by LRU replacement • LRU repair by SRU replacement	• SRU repair authorized at "I" level	
M Characteristics of Equipment Design	• Redundant systems in aircraft • LRU accessibility • Modular R/T unit • R/T unit test meter	• Non-modularized control unit	• Internally mounted fuze • Preset function design • SRUs (2) beyond "I" level repair capability
Maintenance Data Collection Documentation and Feedback System	• Automated data processing • Periodic reports • Special reports if requested	• Accuracy of data logged on the 349s	
Maintenance Organization	• Two-level maintenance system (flightline maintenance performed by "I" shop)		
Organizational Level AGE	• Flightline test set authorized	• Flightline test set not used	• User-built interconnection box for AN/ARC-109 testing
Preventive Maintenance		• None required	
Technical Orders			
Training and Personnel Skills Level		• Least experienced work aircraft problems on flightline	• High attrition rate
Troubleshooting Methods		• Exclusive use of substitution techniques on flightline	

AD-A080 495 HUGHES AIRCRAFT CO CANOGA PARK CALIF MISSILE SYSTEMS--ETC F/G 1/3
DESIGN-FOR-REPAIR CONCEPT DEFINITION VOLUME II. DETAILED ANALYS--ETC(U)
AUG 79 F A GERKIN, J L GREEN, J M KING F33615-78-C-1461
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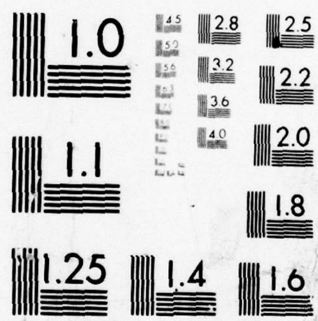

MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

C-5A MARK V TACAN

AREA	POSITIVE	QUESTIONABLE	NEGATIVE
General	• Redundant TACAN sets (two per aircraft) • Low complexity (two LRUs per set) • BIT for system check • Ease of repair (LRU replacement) • Benign maintenance environment	• No preventive maintenance inspections per -6	
Accessibility	• Control unit console mounted in cockpit • R/T unit rack mounted in avionics compartment on flight deck		
AGE of System and Technology	• Solid-state components • Plug-in modules (R/T unit only) • Plug-in circuit boards in R/T unit modules • Non-pressureized R/T unit case • No electro-mechanical components	• Early '70s technology • External cooling air required for R/T unit • Non-modularized control unit	• Front panel rotary switches
Debriefing	• Comprehensive sortie data logged on MAC form 278	• Limited/inaccurate malfunction description is relayed to maintenance shop	

C-5A MARK V TACAN

AREA	POSITIVE	QUESTIONABLE	NEGATIVE
Depot Support	• Depot shop has test/repair capability for LRUs/SRUs • Depot shop has same LRU test equipment as field shops • Depot shop has SRU test sets to facilitate test and repair		• Control unit and some R/T unit repairs beyond field capability
Pre, In, Post-flight Inspection	• Performed by aircrew • Limited to operational check/BIT		
Level of Base Repair	• System repair by LRU replacement • LRU repair by SRU replacement		• LRU repairs beyond field capability
M Characteristics of Equipment Design	• Redundant aircraft TACAN sets • Modularized R/T unit • Plug-in circuit boards in R/T unit modules • Test connector on R/T unit	• BIT (not required by aircrews or maintenance personnel to check system operation • Non-modularized control unit • No BIT meter on R/T unit	• Control unit design which precludes field repair
Maintenance Data Collection, Documentation and Feedback System	• Automated data processing • Periodic reports • Special analysis if requested	• Accuracy of data logged on the 349s	
Maintenance Organization	• Two-level maintenance system (flightline maintenance performed by Nav Shop)		

C-5A MARK V TACAN

AREA	POSITIVE	QUESTIONABLE	NEGATIVE
Organizational Level AGE	• Common, portable, simple-to-use flightline test set	• Flightline test set not utilized • "I" level test set complexity	• "I" level test set design deficiencies (interconnection cable connector problems)
Preventive Maintenance		• None required	
Technical Orders	• Flightline and overhaul manuals satisfactory		• "I" level manual problems (complex checkout procedure, many changes, TOPS pages excessive)
Training and Personnel Skills Level		• Five-level manning is low (66% of authorized)	
Troubleshooting Methods		• Exclusive use of substitution techniques on flightline	

F-15 RADAR SET AN/APG-63

AREA	POSITIVE	QUESTIONABLE	NEGATIVE
General	• High frequency, pulse doppler • 0.5 MMH/FH • No -6 inspection requirements	• Weapon System Integrated BIT	
Accessibility of Avionics	• Generally no accessibility problems • Majority of LRUs are co-located in the forward-left nose equipment bay. • Most units can be removed or replaced within 5 minutes. • Quick disconnects provided for electrical cables, coaxial cables, liquid cooling lines and waveguides. • LRU secured by rack mounted, swing-latch bolts.		
Age of System and Technology	• Solid state design • Micro-electronic circuitry • Hybrids • Programmable signal processor	• Electro-hydraulic components • Electro-mechanical components • Late 60's - early 70's technology • Waveguides • Multi-strand wire cables • Combined analog and digital processing • Ribbon cable	
Debriefing	• Debriefing Performed	• Debriefing necessary for maintenance • Even with debriefing, maintenance personnel often have to perform functional testing to identify problem areas.	• Maintenance personnel do not attend debriefing or have a qualified representative. • Information documented by the debriefer on the AFTO 349 is not sufficient enough to provide the necessary visibility required to perform maintenance.

F-15 RADAR SET AN/APG-63

AREA	POSITIVE	QUESTIONABLE	NEGATIVE
Depot Support	• Depot Support Established • LRU and SRU repair performed at the same depot (Warner-Robins)	• MACAIR Interim Depot	• Continuing functional problems have reduced spare resources (LRU and SRU) available to operational units. • Of the unsatisfactory reports received by the depot, over 50% test good, and over 45% are problems associated with test tolerances. • Due to paucity of resources, some modules, classified as throwaway, are being accepted and repaired by the depot.
(Pre, In, Post) - Flight Inspection	• None required		
Level of Base Repair	• No scheduled maintenance • No deviation from specified maintenance concept.		
Maintainability Characteristics of Equipment Design	• Solid state circuitry • Quick disconnect cannon-type plugs for wiring interface to and between LRUs. • Quick disconnect swing-latch fasteners for simplified installation/removal of waveguides and LRUs. • Each major (powered) LRU has a BIT fault indicator. • BIT provides inflight continuous monitoring. • Operator initiated BIT employed to determine unit and overall system status.	• Maintenance personnel would like a hot mockup to screen suspected LRUs and to provide for functional testing of repaired LRU's. • Troubleshooting of the transmitter (011) requires draining of the liquid coolant (oil). • Test points for the (011) transmitter are not located so that the majority of troubleshooting could be performed without violating the environmental integrity of the cooling system.	• Organizational and intermediate level maintenance personnel have noted apparent tolerance differences between depot and intermediate test equipment an AN/APG-63 BIT. • LRUs sometimes exhibit a tendency to operate as matched sets. • Transmitter (011) maintenance equipment: Fill-drain system for oil coolant requires 45 minutes to drain, purge, fill and recirculate oil.

AREA	POSITIVE	QUESTIONABLE	NEGATIVE
Maintainability Characteristics of Equipment Design (continued)	• BIT determines fault presence (essentially fully effective) • BIT traces fault to specific LRU (70-80% effective) • BIT fault indicators provided for each major LRU.	• Troubleshooting false radar target problems ('Birds') requires detailed data on radar operational mode and observed display pattern. A more technically accurate troubleshooting method is needed. • Potentially dangerous situation exists when removing certain LVPS (610) seals due to presence of pressurized nitrogen. • Pin insertion/extractor tools are considered to be of poor quality - malfunctioning or breaking after 1-3 uses. • Forward equipment bay doors must be opened before radome mounting bolts can be accessed. • Maintenance delays are reported by radar technicians due to requirement for ECS (Environmental Control) personnel to service the AN/APG-63 coolant system. Radar technicians would prefer to service the coolant system themselves as it relates to the AN/APG-63.	• BIT inconsistency - it is sometimes difficult to verify inflight BIT failures under ground power conditions or to obtain consistent BIT indications. • Insufficient organizational AGE (primarily electrical power and air cooling units) to support maintenance. • Use of screw-on vice plug-in coaxial connector on the receiver (022). • Pin replacement in connectors is difficult. • Moisture problems exist with the waveguide providing 'RF' to the missiles station from the radar (problem is associated with the water separator. • BIT for radar range and angle tracking functions needs improvement (such as the provision of a low power level output through a dummy load to check these functions).

F-15 RADAR SET AN/APG-63

AREA	POSITIVE	QUESTIONABLE	NEGATIVE
Maintenance Data Collection Documentation and Feedback System	• Maintenance data collection is in accordance with AFM 66-1. • Constant review and analysis is performed. • Feedback information has been effective. • Failure trend analysis are performed by on-site contractor representatives which have proven to be most useful.	• Effectiveness of feedback information is dependent upon the presence of (need for) a qualified analyst.	• MDCS required to perform effective maintenance/ troubleshooting.
Maintenance Organization			
Organizational Level AGE	• Required AGE is available	• AGE required or necessary	• In actual practice, maintenance personnel will use AGE only when absolutely necessary.
Preventative Maintenance	• No PM scheduled for the AN/APG-63 radar.		
Technical Orders	• Technical orders available at all maintenance levels.	• Hard copy T.O.s required • Depot level technicians find it to be cumbersome to trace necessary data through multiple T.O.s.	• Sufficient data on BIT operation is not provided to organizational maintenance personnel. Difficulty is encountered in discriminating between system and BIT failure.

F-15 RADAR SET AN/APG-63

AREA	POSITIVE	QUESTIONABLE	NEGATIVE
Technical Orders (continued)			• BIT Matrix data (LRU BIT failure parameters) are not available to 'I' level technicians - such data would facilitate more efficient troubleshooting.
Training and Personnel Skills Level	• 'Authorized' skill requirements adequate to meet maintenance concept	• AN/APG-63 experience is biggest asset in making effective repairs. • Extensive AN/APG-63 OJT required for a technician to become proficient; basic training in electronics for unexperienced personnel needs to be expanded.	• 'Authorized' skills level requirements not available • Equipment/support system design does not reflect revaluation of human factors in light of integration of female technicians into the maintenance complex.
Troubleshooting Methods	(O) BIT employed to identify faulty LRUs. (D) Functional testing/verification of all returned/repaired LRUs.	(I/D) Manual probing/testing necessary to supplement ATE.	(O/I) When local spares become critical, a hot mockup used to screen and repair faulty LRUs (aircraft with an operational radar used as a hot mockup).

F-15 RADAR SET AN/APG-63

AREA	POSITIVE	QUESTIONABLE	NEGATIVE
Technical Orders (continued)			• Schematics and definitive diagrams are not provided to aid field level technicians in troubleshooting. • Field level technical orders are of little use in aiding technicians in finding faults not detected by automatic test equipment. • Test spec updates occasioned by depot level mods are not communicated to intermediate maintenance in a timely manner. Units are erroneously rejected at 'I' level due to testing to the wrong specs. • Insufficient program documentation provided to "I" level technicians for softwave/software changes. As a result, it is difficult to determine exactly what circuitry is being tested. • Absence of feedback from depot to 'I' level on NRTS items. NRTS failure data could facilitate more accurate and complete 'I' level troubleshooting of like items. • Reported inconsistencies between T.O. and test stations terminology.

F-15 ARMAMENT CONTROL AN/AWG-20

AREA	POSITIVE	QUESTIONABLE	NEGATIVE
General	• AN/AWG-17 reconfigured to AN/AWG-20 by combining three LRUs into two. • Automatic Bit and initiated BIT circuit. • No spectial maintenance aids or local modifications		
Accessibility of Avionics	• No accessibility problems with converter programmer (located in forward left avionics bay). • Converter programmer requires only 3-4 minutes to remove or replace. • Converter-programmer wiring interface features quick disconnect cable plugs. • Converter-programmer secured with quick release hinged latches.	• ACP secured in instrument console with 'Phillips' type brass screws.	• Some difficulty encountered in removal/replacement of armament control panel due to limited play of ACP wire bundle at rear of ACP (ACP mounted in left side of pilots forward instrument console within cockpit). • Brass 'Phillips' type screws securing ACP strip at the star slots.
Age of System and Technology	• AN/AWG-20 features integrated circuitry, hybrids, extensive microelectronics and printed circuit cards. • Wire-wrap connections • Digital design • Quick disconnect connectors for wiring and waveguides at interface.	• AN/AWG-20 installed in F-15 around 1973 but reflects mid-to late 60's technology. • AN/AWG-20 installed in F-15 airframe using system integration approach. • Waveguides used • AN/AWG-20 is pre-programmed and controlled from central computer. • Wiring cables/bundles	• Soldered connections

F-15 ARMAMENT CONTROL AN/AWG-20

AREA	POSITIVE	QUESTIONABLE	NEGATIVE
Debriefing	• Debriefing performed	• Debriefing necessary	• AN/AWG-20 maintenance personnel dc not attend debriefing - discrepancy information is relayed via AFTO 349
Depot Support	• Depot support established • LRU and SRU depot maintenance located at same facility.	• About a 15% AWP rate • MACAIR Interim Depot	• Spare support is a continuing problem at the LRU level • Pipeline spares requirement has been significantly increased due to increased depot maintenance time caused by manual probe requirements.
(Pre, in, Post)-Flight Inspection		• Stay voltage check necessary (safety requirement)	• Pre and Post flight inspections performed (stray voltage check using AWM-75)
Level of Base Repair	• No scheduled maintenance required • No deviation from specified maintenance concept		
Maintainability Characteristics of Equipment Design	• Solid state design with BIT • Plug-in SRUs • BIT is good for confirming error presence	• Poor quality pin extractor/insertion tools	• BIT does not resolve faults to LRU. • BIT circuits fail more frequently than primary functions • Problem with wires pulling and breaking at quick-disconnect plugs • Trouble is experienced in replacing pins in connectors.

F-15 ARMAMENT CONTROL AN/AWG-20

AREA	POSITIVE	QUESTIONABLE	NEGATIVE
Maintainability Characteristics of Equipment Design (continued)			• Shortage of spare LRUs has resulted in extensive cannibalization
Maintenance Data Collection Documentation and Feed Back System	• MDCS is in accordance with the procedures of AFM 66-1 • Local management and special study reports are provided at the base level.	• Constant review and analysis required for effective maintenance	
Maintenance Organization			
Organizational Level AGE	• Required AGE available		• AGE required to perform maintenance • Base level capability exists to repair AN/AWM-74 (tests launchers, racks, pylons) at PMEL - but test set designated for depot repair.
Preventive Maintenance	• None required		
Technical Orders	• TOs are adequate to perform maintenance as authorized		• T.O. logic trees are difficult to understand
Training and Personnel Skill Levels	• Personnel assigned are considered to be satisfactorily qualified mechanically		• Personnel assigned are considered to be deficient in electronic qualifications

F-15 ARMAMENT CONTROL AN/AWG-20

AREA	POSITIVE	QUESTIONABLE	NEGATIVE
Troubleshooting Methods	(O) BIT indicates failure presence (I) Fault isolation utilizing ATE (D) Functional checkout of all returned and repaired LRUs	(O) AN/AWM-72 must be used in conjunction with BIT to resolve failures to LRU. (D) Manual probing required to isolate faulty components	(O) An AN/AWM-72 checkout of the weapon system requires four hours - as a result it is frequently not used to check the AN/AWG-20. Rather, the converter-programmer, historically the prime failure cause, is replaced based on a BIT indication of AN/AWG-20 fault presence. If this does not resolve problem the ACP is replaced. (I) High NRTS rate for C-P. (I) The armament control panel is time-consuming to troubleshoot. (I) C-P is difficult to troubleshoot due to insufficient test detail in T.O. (I) AIS repair capability is limited for the C-P. The majority of C-P units are NRTS items. (D) AN/AWG-20 ATE diagnostics are not fully developed

F-16 AN/ARC-164 RADIO

AREA	POSITIVE	QUESTIONABLE	NEGATIVE
General	• Minimum complexity (one LRU) • Ease of repair (LRU replacement)	• Lack of preventive maintenance inspections • No BIT features	• Flightline maintenance environment
Accessibility	• Console mounting in cockpit maximizes accessibility of R/T unit		
AGE of System and Technology	• Mid '70s technology • Solid-state components • No cooling air required • No electro-mechanical components • Ultra-simplified R/T unit modularity (only five modules)	• R/T unit modules interconnected by flat cable	• Front panel rotary switches
Debriefing	• Comprehensive sortie data logged on AFFTC form 300	• Debriefing independent of maintenance shops	
Depot Support	• Depot shop has test/repair capability for LRUs, SRUs and circuit boards • Depot shop LRU/SRU test equipment same as field shops • Depot shop has circuit board test sets to facilitate repair	• SRUs tested using mock-up LRU (no SRU test equipment available)	• Circuit board test equipment complexity • Initial support limited to circuit card repair
Pre, In, Post-flight Inspection	• Performed by aircrew • Limited to operational check		

F-16 AN/ARC-164 RADIO

AREA	POSITIVE	QUESTIONABLE	NEGATIVE
Level of Base Repair	• LRU repair by replacing SRU (slice)	• No SRU repair authorized in "I" level shop	• Lack of LRU test capability at depot initially
M Characteristics of Equipment Design	• Minimum complexity (one major LRU) • Maximum LRU accessibility • Modular R/T unit (only 5 modules) • Circuit boards in modules	• No BIT meter	• Fragile flat flex harness interconnecting modules/circuit cards can be damaged during troubleshooting and SRU replacement
Maintenance Data Collection Documentation and Feedback System	• Automated data processing • Periodic reports • Special reports as requested	• Accuracy of data logged on forms	
Maintenance Organization			
Organizational Level AGE	• Simple "I" level test set (interconnection box plus common test instruments)	• Flightline test equipment not utilized	
Preventive Maintenance		• None required	
Technical Orders	• Flightline manuals being validated and corrected	• SRUs for the "I" level not clearly defined	
Training and Personnel Skills Level			
Troubleshooting Methods		• Exclusive use of substitution on flightline	

F-16 AN/ARN-118 TACAN

AREA	POSITIVE	QUESTIONABLE	NEGATIVE
General	• Low complexity (three major LRUs) • BIT for system check • Ease of repair (LRU replacement)	• Lack of preventive maintenance inspections	• Flightline maintenance environment
Accessibility	• Control unit console mounted in cockpit • R/T and D/A converter mounted in avionics bay at shoulder height	• Twenty fasteners on avionics bay access panel	
AGE of System and Technology	• Mid '70s technology • Solid-state components • No electro-mechanical components	• External cooling air required	• Front panel rotary switches
Debriefing	• Comprehensive sortie data logged on AFFTC form 300		
Depot Support	• LRU repair by Collins under five year RIW contract		
Pre, In, Post-Flight Inspections	• Performed by aircrew • Limited to operational check/BIT		
Level of Base Repair	• LRU replacement on flight-line • LRU functional check at "I" level	• No LRU repair at "I" level	

F-16 AN/ARN-118 TACAN

AREA	POSITIVE	QUESTIONABLE	NEGATIVE
M Characteristics of Equipment Design	• Accessible LRUs • R/T unit test connector	• BIT • No test meter on R/T	
Maintenance Data Collection Documentation and Feedback System	• Automatic data processing • Periodic reports • Special reports as required	• Accuracy of data recorded	
Maintenance Organization			
Organizational Level AGE	• Simple flightline test set authorized • Simple "I" level test set (interconnection box with common test instruments)		
Preventive Maintenance		• None required	
Technical Orders	• Flightline manuals being validated and corrected as required	• "I" level manual very limited in scope	
Training and Personnel Skills Level	• Adequate for LRU repair at "I" level if required		
Troubleshooting Methods		• Exclusive use of substitution on flightline	

SECTION IV

SUBSYSTEM CATEGORY/EQUIPMENT ANALYSIS

ANALYSIS: COMMUNICATIONS EQUIPMENT
(AN/ARC-109 and AN/ARC-164 Radio Sets)

AREA	POSITIVE	QUESTIONABLE	NEGATIVE
General	• Low system complexity (one to two LRUs) • Simplified maintenance concept (one LRU, the R/T unit contains majority of electronics, and is replaced to correct most malfunctions) • Operational tests provide adequate confidence level • Local maintenance aids/ modifications not required for AN/ARC-164 • BIT meter on AN/ARC-109 (provides some quantitative test capability for maintenance purposes)	• No scheduled performance checks per -6 (alignments of R/T units on a scheduled basis would improve system performance) • No BIT features on AN/ARC-164 (majority of maintenance checks and all aircrew checks are qualitative)	• Antennas vulnerable to physical damage because of protrusion from fuselage, especially lower antennas • Locally manufactured AN/ ARC-109 test sets (several different configurations were found in the single depot shop) • Antenna switching relays and controls not part of the R/T unit (adds to complexity of system)
Accessibility	• Console mounted (in cockpit) AN/ARC-164 R/T unit can be easily removed/ installed in approximately 5 minutes using only screwdriver • Rack mounted AN/ARC-109 R/T unit can be easily removed/ installed in approximately 10 minutes using no tools (due to convenient location in electronics compartment on flight deck of C-5)		• Antenna selector relay location in AN/ARC-109 and 164 systems (other equipment must be removed to gain access for test/ replacement)

Sheet 1 of 6

ANALYSIS: COMMUNICATIONS EQUIPMENT
(AN/ARC-109 and AN/ARC-164 Radio Sets)

AREA	POSITIVE	QUESTIONABLE	NEGATIVE
Age of System and Technology	• Mid-70s technology of AN/ARC-164 (small package, high reliability, simplified interconnection between modules, etc.) • Solid-state components (both AN/ARC-109 and 164) • No electronic cooling air required for AN/ARC-164 R/T unit • No electro-mechanical tuning in AN/ARC-164 • Simplified modularity in AN/ARC-164 R/T unit (5 modules versus 11 in AN/ARC-109) • Thumbwheel switches in AN/ARC-109 control panel (no lost knobs, slipping knobs, etc. • Quick release connectors and fasteners on both radio sets	• Early-70s technology (AN/ARC-109) requires remote R/T unit because of size, weight, etc. • Flat flex-cable interconnecting modules in AN/ARC-164 R/T unit (easily damaged during maintenance)	• Electronic cooling is required for AN/ARC-109 R/T unit • Electro-mechanical tuning servo in AN/ARC-109 • Rotary switches on AN/ARC-109 and -164 control panels (problems: lost knobs, slipping knobs, knobs lost in cockpit, etc.) • Analog signal processing with alignments for signal levels
Debriefing	• Simple, standardized write-ups (adequately descriptive, easily entered in the aircraft forms by aircrews, and easily comprehended by debriefers)		

Sheet 2 of 6

ANALYSIS: COMMUNICATIONS EQUIPMENT
(AN/ARC-109 and AN/ARC-164 Radio Sets)

AREA	POSITIVE	QUESTIONABLE	NEGATIVE
Debriefing (continued)	• Comprehensive data recorded on debriefing forms and transmitted to maintenance shop (eliminates need for direct communication between radio maintenance personnel and debriefing)		
Depot Support	• Depot shop has test/repair capability for LRUs and SRUs beyond capability of field shops • Same test equipment (hot mock-up concept using interconnection box) is used for LRU/SRU testing in depot and field shops • AN/ARC-164 circuit boards from defective SRUs/slices are fault-isolated using depot test sets (better test access, more test capability, etc. when compared to hot mock-up concept)	• AN/ARC-109 modules are tested/fault-isolated to the component level using a hot mock-up (simplifies test equipment required but is probably less *efficient than using* special test sets)	• AN/ARC-164 depot shop did not initially have any LRU/SRU test/repair capability (circuit boards were originally expected to be the only depot returns) • AN/ARC-164 circuit board test sets are over-designed (power supply capability is far in excess of requirements)
Pre-, In-, Post-Flight Inspections	• Performed by aircrews (maintenance checks radios only in response to a write-up or pre-flight call to aircraft) prior to each sortie	• Qualitative check only (no BIT for constant monitoring of power out or SWR is provided and marginal performance or incipient failure might be overlooked)	

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ANALYSIS: COMMUNICATIONS EQUIPMENT
(AN/ARC-109 and AN/ARC-164 Radio Sets)

AREA	POSITIVE	QUESTIONABLE	NEGATIVE
Level of Base Repair	• System repair requires only LRU replacement (no alignments at system level) • Modules from both AN/ARC-109, -164 can be repaired in the intermediate level shop (Note: AN/ARC-164 module repair is limited to circuit board replacement by -6)	• AN/ARC-164 circuit board alignments are beyond intermediate shop capability (returned to depot for alignment using depot test set)	• AN/ARC-109 control unit and AN/ARC-164 control panel are depot repair items (due to high density wiring on rotary switches)
M Characteristics of Equipment Design	• Modular R/T units for repair by SRU replacement • AN/ARC-164 SRUs are modularized (containing circuit boards) for ease of repair • AN/ARC-164 has no chassis (flat flex harness interconnects the 5 modules). Each subassembly of the AN/ARC-164 is a true SRU stocked as a spare) • AN/ARC-109 has BIT meter on R/T unit • Redundant AN/ARC-109 sets in the C-5A	• AN/ARC-109 has none modularized control unit (beyond repair capability of intermediate shops) • AN/ARC-164 has no BIT meter	• AN/ARC-109 control unit has internally mounted fuze • AN/ARC-109 control unit has non-tamper-proof preset frequency selector • AN/ARC-164 interconnecting that flex harness is easily damaged during radio maintenance
Maintenance Data Collection Documentation and Feedback System	• Automated data processing • Periodic reports • Special reports as required		

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ANALYSIS: COMMUNICATIONS EQUIPMENT
(AN/ARC-109 and AN/ARC-164 Radio Sets)

AREA	POSITIVE	QUESTIONABLE	NEGATIVE
Maintenance Organization	• No radio shop support of debriefing is necessary • Two-level maintenance organization can be utilized (intermediate shop dispatches to flightline for system repair)		
Organizational Level AGE	• No special flightline equipment required (common radio test set authorized but normally only an SWR meter is used) • LRU checks/alignments using simple interconnection box for hot mock-up • AN/ARC-164 circuit boards tested/fault-isolated using specialized test sets at depot • AN/ARC-164 hot mock-up interconnection box factory built	• AN/ARC-109 modules tested/fault-isolated using same hot mock-up equipment as supports LRUs	• AN/ARC-109 hot mock-up interconnection box required local manufacturer • AN/ARC-164 circuit board test equipment is over-designed (far too many power supplies utilized)
Preventive Maintenance	• None per -6 (maintenance personnel, in general, seem to support this concept)	• Periodic adjustment at some (undefined) interval seems necessary to maintain peak performance due to analog design with adjustments	

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ANALYSIS: COMMUNICATIONS EQUIPMENT
(AN/ARC-109 and AN/ARC-164 Radio Sets)

AREA	POSITIVE	QUESTIONABLE	NEGATIVE
Technical Orders	• Organizational level manuals satisfactory • AN/ARC-109 intermediate/depot manual satisfactory	• AN/ARC-164 intermediate manual does not clearly define SRUs for replacement and return to depot	• AN/ARC-164 depot manual lacks sufficient detail for repair of some repairables
Training and Personnel Skills Level	• Depot personnel 7-level skilled (low turnover, high experience level, more specialized, etc.) in electronics maintenance	• Intermediate level personnel average 5-level skills (high turnover, less specialization, etc.) and can best be used for SRU replacement	• Organizational level personnel (and intermediate level personnel dispatched to flightline) have only 3-level electronics maintenance skills and are limited to LRU replacement.
Troubleshooting Methods	• AN/ARC-109 system level LRU substitution following system check using BIT meter (redundant C-5A radios provide convenient spare LRUs) • AN/ARC-164 fault-isolation by substitution (only 5 modules, functions clearly labeled) following checkout on hot mock-up	• AN/ARC-164 system level LRU substitution following system operational check (damage to substituted unit might result) • AN/ARC-109 fault-isolation by substitution (11 modules with interrelationships between functions in some cases) following checkout on hot mock-up	

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ANALYSIS: NAVIGATION EQUIPMENT
(AN/ARN-118 and MARK V TACAN Sets)

AREA	POSITIVE	QUESTIONABLE	NEGATIVE
General	• Redundant systems (C-5A aircraft only) • Low complexity systems (2 or 3 units plus shock mount, antenna switching in receiver/transmitter) • Built-in-test features • Simplified repair concept (replace unit and align if necessary) • Flush mounted lower antennas minimize physical damage • Operational checks performed by aircrews provides adequate confidence levels	• No scheduled performance checks/alignments per -6 (alignment of analog circuitry on a scheduled basis might improve performance)	• TACAN antenna selector switch located on anti-ice panel rather than TACAN control panel (AN/ARN-118) • Antennas vulnerable to physical damage due to protrusions from fuselage (upper antennas only)
Accessibility	• Console mounted (in cockpit) control units easily removed/installed in 5 minutes using only a screwdriver • MARK V receiver/transmitter rack-mounted in avionics compartments on C-5 flight deck can be replaced in 10 minutes without tools		• AN/ARN-118 avionics compartment door on F-16 aircraft requires considerable time to open/close (fastened with 20 fasteners)

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ANALYSIS: NAVIGATION EQUIPMENT
(AN/ARN-118 and MARK V TACAN Sets)

AREA	POSITIVE	QUESTIONABLE	NEGATIVE
Accessibility (continued)	• AN/ARN-118 receiver/transmitter and digital/analog adapter are rack-mounted in F-16 shoulder height avionics compartment for 10 minute replacement without tools (Note: does not include opening/closing door on compartment)		
Age of System and Technology	• Mid-70s solid-state electronics (AN/ARN-118) • Non-pressurized receiver/transmitter cases • Forced cooling air not required for AN/ARN-118 receiver/transmitter • No electro-mechanical servos (for receiver/transmitter tuning) • Digital signal processing used extensively	• Forced cooling air required for MARK V receiver/transmitter • Some analog signal processing techniques used • Early-70s solid-state electronics (MARK V) • Shock-mounted units plug into mount which interfaces with aircraft wiring)	• Rotary switches (versus pushbutton or thumbwheel switches) on control units
Debriefing	• Comprehensive sortie data logged on debriefing forms • Simple, standardized write-ups describe most malfunctions (associated with displayed range/bearing or identification tone)	• Navigation shop personnel do not participate in aircrew debriefing (an infrequent problem is the loss of valuable maintenance data associated with complex problems)	• Write-ups caused by TACAN failure but not directly attributable to that system (such as automatic navigation system errors) are not adequately descriptive as logged by debriefing

Sheet 2 of 7

ANALYSIS: NAVIGATION EQUIPMENT
(AN/ARN-118 and MARK V TACAN Sets)

AREA	POSITIVE	QUESTIONABLE	NEGATIVE
Depot Support	• AN/ARN-118 LRU repair by Collins under 5 year reliability improvement warranty • MARK V unit and module test/repair capability provided by depot shop • Same hot mock-up test set-up for testing units in both the depot and intermediate shops (MARK V only) • Module test sets supporting hot mock-up in depot shop (MARK V only)		
Pre-, In-, Post-Flight Inspections	• Performed by aircrews (maintenance checks TACAN only in response to write-up or preflight call to aircraft) prior to each sortie • Cross-checks between C-5A redundant TACANs provides aircrews additional data on system status • Quantitative checks performed (range, bearing on local stations and built-in-test) during preflight provide good tests of most-used system functions	• TACAN outputs to automatic navigation systems not thoroughly checked during preflights	

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ANALYSIS: NAVIGATION EQUIPMENT
(AN/ARN-118 and MARK V TACAN Sets)

AREA	POSITIVE	QUESTIONABLE	NEGATIVE
Level of Base Repair	• System repairable by unit replacement (alignments, if required, are normally accomplished in the intermediate shop) on the flightline • Receiver/transmitter repair by module replacement (MARK V) in an intermediate level shop • No receiver/transmitter repair at intermediate level (AN/ARN-118) during the reliability improvement warranty program (5 years)		• Control unit designs which precludes intermediate level repair • Chassis complexity which precludes intermediate level repair (MARK V receiver/transmitter)
M Characteristics of Equipment Design	• Built-in-test circuitry for system test • Simplified system repair by unit replacement • Modular receiver/transmitter (MARK V) with plug-in modules for ease of repair • Discardable, plug-in circuit boards in receiver/transmitter modules (MARK V) for simplified module repair	• Test connectors on the receiver/transmitters be test access. Results in complex test set and test procedures (MARK V) plus adding considerably to complexity of the unit • No built-in-test meter on the receiver/transmitter units for quantitative system checks at aircraft	• Control units are not modularized for ease of repair

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ANALYSIS: NAVIGATION EQUIPMENT
(AN/ARN-118 and MARK V TACAN Sets)

AREA	POSITIVE	QUESTIONABLE	NEGATIVE
Maintenance Data Collection Documentation and Feedback System	• Automated data processing • Periodic reports • Special reports as required • Receiver/transmitters are equipped with power-on elapsed time indicators • Operating time from failed unit is supposed to be logged on repairable item tag, AFTO 350 • Collins, by acting as the depot on the AN/ARN-118, has direct access to elapsed time indicator readings for accurate determination on utilization and reliability		• Maintenance personnel often times fail to log the elapsed time indicator reading on the AFTO 350 and that data is lost (MARK V only)
Maintenance Organization	• Two-level maintenance organization (intermediate shop dispatches to flightline) can be effectively utilized to support these systems due to their low failure rates, especially the AN/ARN-118 • Three-level maintenance organizations (flightline personnel repair aircraft system) can effectively support these systems due to their low complexity and ease of repair		

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ANALYSIS: NAVIGATION EQUIPMENT
(AN/ARN-118 and MARK V TACAN Sets)

AREA	POSITIVE	QUESTIONABLE	NEGATIVE
Organizational Level AGE	• Common, portable, simple-to-use flightline test sets authorized • Simple hot mock-up interconnection test set for intermediate level AN/ARN-118 maintenance (used only for a unit fault-verification test)	• Complex hot mock-up interconnection test set for intermediate level MARK V maintenance (high complexity results from the AGE connector interface/display requirements)	• AGE connectors and cables on the MARK V hot mock-up interconnection test set are poorly designed and unreliable
Preventive Maintenance	• None per -6 (maintenance personnel, in general, seem to support this concept based on past experience)	• Periodic tests/alignments at some (undefined) interval seems necessary to maintain peak performance due to analog design with adjustments in both receiver/transmitter and interface functions	
Technical Orders	• Organizational level flightline manuals are adequate for these systems • Depot manual for the MARK V is adequate	• Intermediate level manual for the AN/ARN-118 is very limited in scope (this is not a problem because no repair is accomplished at this level)	• Intermediate level manual for the MARK V contains a complex, often revised checkout procedure with many errors
Training and Personnel Skills Level	• Depot personnel maintaining the MARK V have 7-level skills and can support the system effectively	• Intermediate level personnel average 5-level skills but have a high turnover, insufficient specialization, etc.	• Organizational level personnel (and intermediate level personnel dispatched to flightline) have only 3-level skills

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ANALYSIS: NAVIGATION EQUIPMENT
(AN/ARN-118 and MARK V TACAN Sets)

AREA	POSITIVE	QUESTIONABLE	NEGATIVE
Training and Personnel Skills Level (continued)	• Organizational personnel (and intermediate shop personnel dispatched to the flightline) have adequate skills to support these TACAN sets • Intermediate level checks required in support of the AN/ARN-118 can be easily accomplished by the majority of shop personnel	• MARK V intermediate level maintenance should only be accomplished by the more experienced shop personnel due to its complexity	
Troubleshooting Methods	• System fault-isolation by substitution of units is successful in most cases following fault-verification using built-in-test • MARK V receiver/transmitter fault-isolation by module substitution is successfully utilized • TACAN control units and AN/ARN-118 receiver/transmitter are given a fault-verification test at intermediate level pride to return to the depot • MARK V receiver/transmitter modules are fault-isolated at the depot by substitution of circuit boards	• MARK V receiver/transmitter fault-isolation using technical manual procedures is difficult for other than highly skilled technicians due to complexity of the procedure • MARK V control units are fault-isolated by point-to-point continuity checks in the depot shop	

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ANALYSIS: RECONNAISSANCE EQUIPMENT
(KB-18A Strike Camera and KS-97A Radar Scope Camera Systems)

AREA	POSITIVE	QUESTIONABLE	NEGATIVE
General	• Low complexity systems (2 units plus film magazine) • Aircrews install/remove KS-97A film pack • Built-in-test features • No special maintenance aids or local modifications required • Simple maintenance concept (Replace defective unit) • Low utilization rates for camera systems (maintenance resources required for support are minimized due to the low maintenance demand rate)	• Built-in-test features, etc. do not provide adequate confidence of proper camera functioning (KS-97A motor running is verified by feel--film pack vibrates--and film advancement cannot be verified)	• Preventive maintenance inspections which require removal of the equipment from aircraft for shop maintenance, are required by the -6 technical manual
Accessibility	• KS-97A camera system (mounted in F-4E rear cockpit) can be easily removed or installed in 15 minutes • KA-18A camera system units (mounted in left forward avionics compartment and in lower forward fuselage of F-111D) can be readily removed or installed in 15-20 minutes • KS-97A film pack installation/removal is simple operation requiring less than one minute (performed by aircrews)	• KB-18A film pack location (accessible only to maintenance personnel; maintenance workload could be greatly decreased by aircrews handling film) • KB-18A built-in-test panel not co-located with camera which discourages system checkout following film loading.	• Removal/installation of KB-18A control unit is hampered by presence of wire bundles • KS-97A mounts on radar scope (removal required for scope maintenance) • KS-97A cable connects under instrument panel and is hidden from view (cables are frequently damaged when scope removal is attempted with cable connected)

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ANALYSIS: RECONNAISSANCE EQUIPMENT
(KB-18A Strike Camera and KS-97A Radar Scope Camera Systems)

AREA	POSITIVE	QUESTIONABLE	NEGATIVE
	• Quick-release fasteners and connectors utilized on all access doors, mountings and connections		• Poor access to temperature control switch in camera compartment (KB-18A)
Age of System and Technology	• Solid-state components • No system harmonization adjustments required on the aircraft • Fixed lens-systems (minimum complexity, high reliability) • Commercially loaded film packs (Kodak refills KS-97A film packs)	• Electro-mechanical components • Analog signal processing • Technolog and equipment in excess of 10 years old; (however, no mention of wear-out problems was encountered)	• Control panel rotary switches (KS-97A) • Film recording medium (processing delays, hazardous/messy chemicals, etc.)
Debriefing	• Simple, standardized write-ups (adequately descriptive for maintenance purposes while easily entered in forms by aircrews/debriefers) • Comprehensive sortie data logged on debriefing forms (made available to maintenance organization for aircraft history)	• Coordination between debriefing, photo shop and camera maintenance shop is required (for fault-isolation between film pack and camera)	• Camera system status cannot be determined during debriefing due to delays in film processing and assessment (delayed write-ups, discovered following the maintenance debriefing, are difficult to process properly)
Depot Support	• Depot shop has test/repair capability for units and subassemblies beyond repair capability of the intermediate shops		

ANALYSIS: RECONNAISSANCE EQUIPMENT
(KB-18A Strike Camera and KS-97A Radar Scope Camera Systems)

AREA	POSITIVE	QUESTIONABLE	NEGATIVE
	• Depot test sets (GPATS, collimators, etc.) provide more extensive test capability (tighter tolerances, more comprehensive tests, etc.) than intermediate level test equipment		
Pre, In, Post-Flight Inspection	• Performed by aircrews (maintenance checks camera operation only in response to reported problem) prior to and during flight	• Positive indication of operational status provided to aircrew for KB-18A system (reset film counter which advances when camera activated for operational test) • Built-in-test features operable from cockpit are not provided for the KB-18A system • Warning light (rather than film counter) for film remaining in KS-97A film pack	• Built-in-test function (KS-97A system) does not provide positive indication of camera operation. Aircrew determines motor running/film advancing by feel • Visual checks of KB-18A camera (desirable for aircrew to determine if film pack is loaded/replaced) are not practical due to inaccessibility of film pack
Level of Base Repair	• System repair by unit replacement (no alignments required at system level) • Electro-mechanical components replaceable in intermediate level shop (easily accomplished with resources available) allows repair of most failures	• Electronic component replacement in intermediate shop (resources, especially electronics fault-isolation experience, are not readily available). Control units, especially, contain electronics circuitry which is beyond the repair resources of camera shops	

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ANALYSIS: RECONNAISSANCE EQUIPMENT
(KB-18A Strike Camera and KS-97A Radar Scope Camera Systems)

AREA	POSITIVE	QUESTIONABLE	NEGATIVE
Maintainability Characteristics of Equipment	• Built-in-test functions for system checks • Line-replaceable units for system repair (no alignments required on the aircraft) • Film packs reloadable by vendor (reduces photo/camera shop manpower requirements) • Modularized KB-18A control unit (plug-in circuit boards simplify fault-isolation/repair) • Lens assemblies replaceable in intermediate shop for depot repair	• Lack of built-in-test control/indicator in cockpit (KB-18A) prevents aircrews from checking system status • Lack of modularity (no plug-in subassemblies, etc.) in KS-97A camera control unit	• KB-18A built-in-test control/indicators on control panel in avionics bay (co-location with camera or cockpit locations are preferable) • Camera shop support in the form of film pack installation and removal, required for system operation (servicing tests should be accomplishable by organizational level personnel or aircrews rather than intermediate level personnel) • KB-18A built-in-test and system operational checks require two personnel (one activates test and one observes camera) • Problem with connector alignment following maintenance on camera drive assembly
Maintenance Data Collection Documentation System	• Constant review and analysis not required (high reliability/low utilization rate) • Automatic data processing of AFTO 349s and AFTO 350s provides periodic reports and special reports, if requested	• Camera systems not equipped with elapsed time indicators (assessment of reliability, utilization, etc. is difficult or impossible)	

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ANALYSIS: RECONNAISSANCE EQUIPMENT
(KB-18A Strike Camera and KS-97A Radar Scope Camera Systems)

AREA	POSITIVE	QUESTIONABLE	NEGATIVE
Maintenance Organization	• Two-level maintenance organizations (with intermediate level shop dispatch to flight line) can maintain camera systems due to low maintenance demand rate and simplicity of system in aircraft (Note: servicing of camera systems with film is not considered maintenance) • Three-level maintenance organization can support camera systems due to low complexity, ease of checkout, etc. • Aircrews can install, checkout, remove KS-97A film packs due to system design	• Film pack installation, removal, and handling in support of KB-18A operations accomplished by intermediate level shop (problems with transportation and control of personnel on flightline during periods of high system utilization not compatible with intermediate shop dispatch concept)	
Organizational Level Age	• No special flightline equipment is required • Portable, simple suitcase type test sets provide functional checkout capability at intermediate level	• Optical checkout/alignment fixtures provided to intermediate level for support of KS-97A (equipment is little used since most maintenance at intermediate level is replacement of electromechanical components)	• Camera test set (LS-83A) is reported to provide erratic readouts

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ANALYSIS: RECONNAISSANCE EQUIPMENT
(KB-18A Strike Camera and KS-97A Radar Scope Camera Systems)

AREA	POSITIVE	QUESTIONABLE	NEGATIVE
Preventive Maintenance	• Frequent preventive maintenance (for cleaning, lubrication, alignment, etc.) does not seem to be essential to maintaining reliable system operation	• Camera system designs requiring cleaning and lubrication which cannot be accomplished with the system installed in the aircraft	• KB-18A preventive maintenance every 125 hours which requires camera removal from aircraft for intermediate shop maintenance (KS-97A requirement, as a comparison, is 600 hours)
Technical Orders	• Camera system manuals are satisfactory		
Training & Personnel Skills Level	• 5-level skilled personnel assigned to the intermediate level camera shop have adequate skills to perform the flightline and shop maintenance required in support of these systems • 7-level skilled personnel in the depot shop (are highly specialized and experienced in performing camera maintenance) which provides the necessary capabilities to perform repairs of electronics and optics	• Fault-isolation to the electronic component level in the intermediate shop (requires training/experience beyond that possessed by the average 5-level camera technician) • Lack of specialized training/experience and high turnover rates in the intermediate level shops detracts from their capability to perform repair of electronics/optics in camera systems	• Intermediate level personnel from the camera shop dispatched to the flightline are normally the less skilled technicians averaging 3-level skills on these camera systems

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ANALYSIS: RECONNAISSANCE EQUIPMENT
(KB-18A Strike Camera and KS-97A Radar Scope Camera Systems)

AREA	POSITIVE	QUESTIONABLE	NEGATIVE
Troubleshooting Methods	• Complete system pulled from aircraft and each unit tested in shop (used exclusively on the KS-97A and approximately 50% of the time for the KB-18A) • Substitution of line-replaceable-units utilized 50% of time for the KB-18A (low complexity, built-in-test, and analysis of malfunction provides high degree of success on first attempt) • Substitution of plug-in modules in the KB-18A control unit	• Intermediate level fault-isolation using technical manual procedures, circuit analysis, substitution of parts and electronic components, etc.	

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ANALYSIS: WEAPON DELIVERY EQUIPMENT
(AN/AWG-20 Armament Control)

AREA	POSITIVE	QUESTIONABLE	NEGATIVE
General	• AN/AWG-17 reconfigured to AN/AWG-20 by combining three LRUs into two. • Automatic Bit and initiated BIT circuit. • No spectial maintenance aids or local modifications		
Accessibility of Avionics	• No accessibility problems with converter programmer (located in forward left avionics bay). • Converter programmer requires only 3-4 minutes to remove or replace. • Converter-programmer wiring interface features quick disconnect cable plugs. • Converter-programmer secured with quick release hinged latches.	• ACP secured in instrument console with 'Phillips' type brase screws.	• Some difficulty encountered in removel/replacement of armament control panel due to limited play of ACP wire bundle at rear of ACP (ACP mounted in left side of pilots forward instrument console within cockpit). • Brass 'Phillips' type screws securing ACP strip at the star slots.
Age of System and Technology	• AN/AWG-20 features integrated circuitry, hybrids, extensive microelectronics and printed circuit cards. • Wire-wrap connections • Digital design • Quick disconnect connectors for wiring and waveguides at interface.	• AN/AWG-20 installed in F-15 around 1973 but reflect mid-to late 60's technology. • AN/AWG-20 installed in F-15 airframe using system integration approach. • Waveguides used • AN/AWG-20 is pre-programmed and controlled from central computer. • Wiring cables/bundles	

ANALYSIS: WEAPON DELIVERY EQUIPMENT
(AN/AWG-20 Armament Control)

AREA	POSITIVE	QUESTIONABLE	NEGATIVE
Debriefing	• Debriefing performed	• Debriefing necessary	• AN/AWG-20 maintenance personnel do not attend debriefing - discrepancy information is relayed via AFTO 349
Depot Support	• Depot support established • LRU and SRU depot maintenance located at same facility.	• About a 15% AWP rate • MACAIR Interim Depot	• Spare support is a continuing problem at the LRU level • Pipeline spares requirement has been significantly increased due to increased depot maintenance time caused by manual probe requirements.
(Pre, in, Post)-Flight Inspection		• Stay voltage check necessary (safety requirement)	• Pre and Post flight inspections performed (stray voltage check using AWM-75)
Level of Base Repair	• No scheduled maintenance required • No deviation from specified maintenance concept		
Maintainability Characteristics of Equipment Design	• Solid state design with BIT • Plug-in SRUs • BIT is good for confirming error presence	• Poor quality pin extractor/insertion tools	• BIT does not resolve faults to LRU. • BIT circuits fail more frequently than primary functions • Problem with wires pulling and breaking at quick-disconnect plugs • Trouble is experienced in replacing pins in connectors.

ANALYSIS: WEAPON DELIVERY EQUIPMENT
(AN/AWG-22 Armament Control)

AREA	POSITIVE	QUESTIONABLE	NEGATIVE
Maintainability Characteristics of Equipment Design (continued)			• Shortage of spare LRUs has resulted in extensive cannibalization
Maintenance Data Collection Documentation and Feed Back System	• MDCS is in accordance with the procedures of AFM 66-1 • Local management and special study reports are provided at the base level.	• Constant review and analysis required for effective maintenance	
Maintenance Organization			
Organizational Level AGE	• Required AGE available		• AGE required to perform maintenance • Base level capability exists to repair AN/AWM-74 (used to launchers, racks, pylons) at PMEL - but test set designated for depot repair.
Preventive Maintenance	• None required		
Technical Orders	• TOs are adequate to perform maintenance as authorized		• T.O. logics trees are difficult to understand
Training and Personnel Skill Levels	• Personnel assigned are considered to satisfactorily qualified mechanically		• Personnel assigned are considered to be deficient in electronic qualifications

ANALYSIS: WEAPON DELIVERY EQUIPMENT
(AN/AWG-20 Armament Control)

AREA	POSITIVE	QUESTIONABLE	NEGATIVE
Troubleshooting Methods	(O) BIT indicates failure presence (I) Fault isolation utilizing ATE (D) Functional checkout of all returned and repaired LRUs	(O) AN/AWM-72 must be used in conjunction with BIT to resolve failures to LRU. (D) Manual probing required to isolate faulty components	(O) An AN/AWM-72 checkout of the weapon system requires four hours - as a result it is frequently not used to check the AN/AWG-20. Rather, the converter-programmer, historically the prime failure cause, is replaced based on a BIT indication of AN/AWG-20 fault presence. If this does not resolve problem, the ACP is replaced. (I) High NRTS rate for C-P. (I) The armament control panel is time-consuming to troubleshoot. (I) C-P is difficult to troubleshoot due to insufficient test detail in T.O. (I) AIS repair capability is limited for the C-P. The majority of C-P units are NRTS items. (D) AN/AWG-20 ATE diagnostics are not fully developed

ANALYSIS: WEAPONS CONTROL EQUIPMENT
(AN/APG-63, AN/APQ-130 Radar Sets and TISEO)

AREA	POSITIVE	QUESTIONABLE	NEGATIVE
General	• System modularity (functions pertained into line-replaceable-units): 1. 4 units (TISEO) 2. 8 units (AN/APQ-130 3. 9 units (AN/APG-63) • Built-in-test features (simplify system checkout, aid in fault-isolation, etc.) • Simple system *maintenance* concepts (designed for operational test plus built-in-test and repair by unit replacement. Requirements for system level alignments have been minimized.) • No local maintenance aids or modifications required. • No preventive maintenance required by the -6 technical manual.	• Complexity of AN/APQ-130 and AN/APG-63 radar sets, with 8 or 9 units (and even the TISEO with 4 units) increases fault-isolation requirements on the flightline.	• Heavy line-replaceable-units, exceeding carrying capacity of two men (receiver/transmitters, both AN/APQ-130 and AN/APG-63 radars) that require support equipment for handling.
Accessibility	• Collocation of major radar units in single equipment bay (minimizes number of doors/panels that must be opened for maintenance of both AN/APG-63 and AN/APQ-130 radars). • Swing-away radome provides quick and easy access to radar antenna (both AN/APQ-130 and AN/APG-63 radars). • Quick-release latches (3) on F-15 equipment bay door (AN/APG-63 radar) provides quick access to radar units. • Control units mounted in cockpit are directly accessible for	• Fasteners (13) utilized on F-111 equipment bay door (latches would have reduced access time for AN/APQ-130 units) • Fuzes located on back of AN/APQ-130 antenna (checks and replacement are a problem).	• Fasteners (36) utilized on F-4 access panel for TISEO power supply (latches would have reduced access time). • Undersized access panel and in-the-wing location of the TISEO video processor (cables cannot be disconnected without partially removing unit; unit removal requires special positioning of wing leading edge flap).

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ANALYSIS: WEAPONS CONTROL EQUIPMENT
(AN/APG-63, AN/APQ-130 Radar Sets and TISEO)

AREA	POSITIVE	QUESTIONABLE	NEGATIVE
Accessibility (continued)	replacement (normally, the canopy is open and cockpit unoccupied).		
Age of System and Technology	• Early-70s design (AN/APG-63 & TISEO). • Solid-state components with hybrids and ICs (both AN/APG-63 & TISEO). • Software controlled, reprogrammable signal processor (AN/APG-63). • Direct interconnection of units using cables, thereby avoiding rack wiring/connector problems. (AN/APG-63 & TISEO) • Quick disconnect/release connectors, fasteners and fittings. • Digital signal processing techniques (extensively used in AN/APG-63). • Plug-in circuit cards/modules.	• Solid-state components with limited use of hybrids and ICs (AN/APQ-130) • Analog signal processing techniques with associated alignments, tolerance checks, etc. • Miniature coaxial cables, specifically Microdot brand, as used in the AN/APQ-130 (becomes brittle with age, breaks easily, and is difficult to repair). • Temperature sensitive electronics (AN/APQ-130 target ranging problems reported in extreme low temperature situations. • Flat ribbon cables interconnecting circuit cards in the AN/APG-63 units (fragile and easily damaged during maintenance.	• Late-60s design (AN/APQ-130) • Hard-wired, nonprogrammable signal processing (AN/APQ-130) • Plug-in units, with rack-mounted interface connectors and inter-rack wiring (AN/APQ-130) • Hybrids utilized in system are out-of-production items (AN/APQ-130) • Unit subassemblies exhibit marriage problems when installed in units (AN/APQ-130) • Less than predicted reliability (AN/APQ-130) • Liquid cooling of transmitters (both AN/APQ-130 and AN/APG-63)
Debriefing	• Comprehensive sortie data logged on debriefing forms, copies of which are available to maintenance for aircraft history.		• Complex, interrelated malfunctions which are difficult to debrief properly (write-ups entered on forms can be erroneous or inadequately descriptive) • Representatives from fire control maintenance shops, in general, are not available at debriefing to provide technical advice to debriefers, and direct communications of technical information to shop)

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ANALYSIS: WEAPONS CONTROL EQUIPMENT
(AN/APG-63, AN/APQ-130 Radar Sets and TISEO)

AREA	POSITIVE	QUESTIONABLE	NEGATIVE
Depot Support	• Depot shops provide test repair for units and subassemblies beyond the repair capability of the field shops. • Single depot shop repairs units and subassemblies (AN/APG-63 and TISEO)	• TISEO units repaired at the depot must be aligned in the intermediate level field shop prior to aircraft installation (based on past maintenance experience). • Two depot shops, one for units and one for subassemblies, that are remotely located from each other (AN/APQ-130 units repaired at Sacramento ALC and subassemblies repaired at Warner Robins ALC). • Modules originally designated discard-at-failure are being repaired at depot (due to the lack of AN/APG-63 spares).	• Depot replacement of defective hybrids is becoming impossible due to limited stock and items out-of-production (AN/APQ-130) • Test tolerance incompatibilities between intermediate/depot test equipment; items repaired at depot check bad when tested at intermediate level then when returned with Unsatisfactory Report (UR) item checks good at depot (AN/APQ-130 and AN/APG-63) • Inadequate quantity of spares available at intermediate level.
Pre, In, Post-Flight Inspection	• No maintenance pre-flight or post-flight inspections required. • Pre-flight inspections performed by aircrews (use combination of operational checks and built-in-test failures) • Continuous fault-monitoring using built-in-test features		• Boresight harmonization alignment required (TISEO) • Low light level operation can damage system (TISEO) which prohibits aircrew checks on some sorties.
Level of Base Repair	• Organizational level system repair by replacement of defective units in conjunction with operational and built-in-test testing (No requirements for system level alignments) • Intermediate level unit repair by replacement of defective shop-replaceable-assemblies and alignment	• Intermediate level maintenance shop, in order to duplicate and repair malfunctions discovered on the flightline, must test units on the hot mock-up in addition to performing unit tests on test station (AN/APQ-130)	• Organizational level maintenance is required to perform quick-fix (system repair during aircraft preflight checks with engine running on the AN/APQ-130

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ANALYSIS: WEAPONS CONTROL EQUIPMENT
(AN/APG-63, AN/APQ-130 Radar Sets and TISEO)

AREA	POSITIVE	QUESTIONABLE	NEGATIVE
Level of Base Repair (continued)	• Intermediate level maintenance using unit test sets is able to duplicate/repair TISEO unit malfunctions/built-in-test failures discovered on the flightline.		• Organizational level maintenance is required to check system operation on aircraft power to duplicate some malfunctions by approximating inflight conditions (AN/APQ-130) • Intermediate level maintenance cannot duplicate/repair some AN/APG-63 unit built-in-test flightline (units check good on existing test stations and no hot mock-up available)
Maintainability Characteristics of Equipment Design	• Modular systems (electronics and electro-mechanicals grouped by function into line-replaceable-units) • Quick and easy unit removal/installation by two-man maintenance team using common hand tools (exceptions noted at right) • Built-in-test functions providing constant monitoring of system status (simplifies system operational checkout, minimizes/eliminates support equipment requirements allows fault-isolation by substitution) • Built-in-test functions in addition to go/no-go status monitoring, which provide fault-diagnostics for maintenance use (AN/APQ-130 and AN/APG-63)	• Built-in-test fault-isolation connector on TISEO control panel (cockpit readout of faults, now requiring test set and control unit test connector could have been accomplished with 2 additional indicator lamps) • Built-in-test control/indicators located only in cockpit (AN/APQ-130 trouble-shooting during "quick-fix" requires excessive coordination between technicians and aircrews) • Unused hardware/functions not modified out of system (specifically, unused AN/APQ-130 duplexer which fails, knocks out radar, and is difficult to replace) • Fuses versus circuit breakers for overload protection (AN/APQ-130)	• Receiver/transmitter unit weight (both AN/APQ-130 and AN/APG-63 units required handling equipment) • Connector pin replacement problems due to breakage of insertion/extraction tools, etc. (AN/APQ-130 and AN/APG-63) • Line-replaceable-unit fasteners which cannot be repaired by intermediate level avionics maintenance shop (female jack screw fasteners on AN/APQ-130 rack are replaced by sheet metal shop; AN/APG-63 unit fasteners are replaced at depot) • Pressurized units (pressurized nitrogen in AN/APG-63 low voltage power supply makes some maintenance actions hazardous)

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ANALYSIS: WEAPONS CONTROL EQUIPMENT
(AN/APG-63, AN/APQ-130 Radar Sets and TISEO)

AREA	POSITIVE	QUESTIONABLE	NEGATIVE
Maintainability Characteristics of Equipment Design (continued)	• Fault-indicators on each major LRU (AN/APG-63) • Modular units (electronics and electro-mechanicals packaged in plug-in modules to simplify fault-isolation by substitution and repair by replacement)	• Radome fasteners accessible through avionics compartment (external fasteners like used on F-4E are preferred) • Flat ribbon cable (utilized for interconnecting modules within AN/APQ-130 line-replaceable-units) is prone to breakage and cannot be repaired. • Equipment rack which includes unit interface wiring (AN/APQ-130 rack is replaced like a line-replaceable unit when wiring problems are suspected) • Flightline procedures (equipment for checking "false radar target" problems as caused by spurious signals (AN/APG-63) • Transmitter liquid coolant system servicing/maintenance on aircraft (avionics maintenance delays are encountered when support is required from responsible shop) • Transmitter maintenance requires violation of TWT cooling system integrity thereby necessitating time consuming servicing (AN/APQ-130 and AN/APG-63) • Transmitter cooling system servicing in intermediate shop is excessively time consuming (due to equipment/procedures utilized time required is approximately 45 minutes for AN/APG-63 and 7-8 hours for AN/APQ-130)	• Equipment rack which is difficult to remove/install with many connectors for waveguides and electrical cables, some of which are relatively inaccessible and difficult to connect/disconnect (AN/APQ-130) • TISEO built-in-test functions very limited in scope (analysis of faults requires flightline test equipment, no method for testing in low-level light is provided, etc.) • AN/APQ-130 built-in-test functions provide inadequate/inaccurate fault-isolation capability (promotes "shotgun" removals, excessive test time and induced failures) • AN/APG-63 built-in-test results are inconsistent (inflight faults cannot be duplicated on ground, intermittent faults on repeated ground checks, units replaced for failing built-in-test check good at intermediate level, etc.) • Alignments sensitive to shock/vibration during handling/transportation (feedhorn alignment which affects antenna boresight is sensitive to shock necessitating special handling)

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ANALYSIS: WEAPONS CONTROL EQUIPMENT
(AN/APG-63, AN/APQ-130 Radar Sets and TISEO)

AREA	POSITIVE	QUESTIONABLE	NEGATIVE
Maintainability Characteristics of Equipment Design (continued)			• AN/APG-63 built-in-test of range and angle tracking functions requires improvement (existing tests provide inadequate confidence level and do not duplicate airborne problems) • Waveguide dehumidification system maintenance procedures (duplexer blows out in AN/APQ-130 due to moisture build-up, missile RF problems in AN/APG-63 due to moisture in wave-guides) • Wiring problems consume considerable maintenance manhours on AN/APQ-130 (vibration/stressing causes intermittent shorts/opens)
Maintenance Data Collection Documentation and Feedback System	• Maintenance data, in the form of aircraft histories, are formed by compiling files of debriefing/maintenance forms by fail number • Automatic data processing of debriefing forms, 349's and 350's (periodic reports and special reports if requested) • Failure trend analysis, using both automatic and manual techniques, is accomplished.	• Effectiveness of maintenance data analysis is dependent on several factors (accuracy of data recorded on debriefing/maintenance forms, qualifications of the analyst, etc.) • Failure trend analysis, as applies to improving maintenance effectiveness on these systems, is non-automated (debriefers/avionics maintenance personnel file forms or by write-ups/fixes to review for repeat write-ups, etc.)	• Constant review and analysis of maintenance data is essential to effective maintenance of these systems (especially the radars, which are more complex than the TISEO) • Automated data processing systems presently do not provide real-time information to the flightline maintenance personnel.
Maintenance Organization	• Intermediate level shop TISEO maintenance personnel assist flightline maintenance personnel with periodic inspections	• Transmitter cooling oil systems on aircarft are not maintained by avionics flightline personnel (delays are encountered	• Three-level maintenance organizations is essential to effective system maintenance (due to lack of commonality between

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ANALYSIS: WEAPONS CONTROL EQUIPMENT
(AN/APG-63, AN/APQ-130 Radar Sets and TISEO)

AREA	POSITIVE	QUESTIONABLE	NEGATIVE
Maintenance Organization (continued)	(shop personnel gain increased skills through additional exposure)	while awaiting support and coordination of related problems/maintenance is required)	flightline and shop maintenance tasks, complexity of test equipment utilized in shop, high maintenance manhour consumption on flightline, and integrated nature of aircraft systems) • Flightline maintenance shop must provide qualified representative at debriefing (provides technical advice to aircrews and debriefs to ensure correctness of write-ups, transfers information beyond the scope of debriefing forms from debriefing to flightline maintenance personnel)
Organizational Level Age	• Reusable shipping container is used to protect TISEO seeker optics/gimbals during handling/transportation between flightline and shop • Antenna hoists are a definite handling aid for removal/installation of AN/APG-63 antenna (due to height above ground)	• AN/APQ-130 antenna is not provided adequate protection during removal/installation/handling (Note: antenna boresight problems related to changes in feedhorn alignment resulting from handling) • Handling equipment for receiver/transmitters: hoists, lift truck adapters, etc. (not utilized because maintenance personnel prefer to man handle these units) • Handling cradle for AN/APG-63 antenna (no antenna damage from handling was reported, however, man handling is preferred by maintenance personnel)	• Control indicator (test set for connection to control unit in cockpit) is utilized for analysis of TISEO built-in-test failures) • TISEO interface test set (for fault-isolation of the aircraft system) is difficult to use due to lack of accessibility to interface connectors) • Collimator is required for flightline checks of TISEO at night (low-level light operation can damage the system) • Handling equipment required for receiver/transmitter units (excessive weight of these units should be reduced to eliminate this requirement since maintenance personnel prefer to man handle these units)

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ANALYSIS: WEAPONS CONTROL EQUIPMENT
(AN/APG-63, AN/APQ-130 Radar Sets and TISEO)

AREA	POSITIVE	QUESTIONABLE	NEGATIVE
Organizational Level Age (continued)		• Identical line-replaceable-unit test sets at intermediate and depot level for TISEO maintenance (provides test tolerance continuity, however, some units require realignment when received at intermediate level) • Hot mock-ups at intermediate level (maintenance personnel must presently use the hot mock-up concept to resolve differences between test tolerances/test philosophy of system built-in-test and test stations for AN/APQ-130 and AN/APG-63	• Special handling equipment for antennas (maintenance personnel would prefer antennas designed for man handling) • Inconsistency of test tolerances/philosophy between system built-in-test, intermediate level test equipment and depot test equipment (AN/APQ-130 and AN/APG-63) • AN/APQ-130 test station does not provide adequate access to interface connectors on units under test (specifically, the electronic processing unit) • Interface cables between AN/APQ-130 test station and unit-under-test are unreliable (develop breaks, intermittent shorts, etc. as a result of bending/flexing) • Transmitter cooling oil servicing equipment in intermediate level shops requires excessive amounts of time to perform purge fail (both AN/APQ-130 and AN/APG-63)

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ANALYSIS: WEAPONS CONTROL EQUIPMENT
(AN/APG-63, AN/APQ-130 Radar Sets and TISEO)

AREA	POSITIVE	QUESTIONABLE	NEGATIVE
Preventive Maintenance	• Scheduled maintenance is not required by the -6 and is not considered necessary based on maintenance experience with these systems (AN/APQ-130 and AN/APG-63) • Scheduled maintenance is not required by the -6 (TISEO)		• Scheduled maintenance has been found to produce positive results and is considered recommended by maintenance personnel (TISEO) • Units received from depot are tested/aligned. Past experience indicates that alignments will be necessary (TISEO)
Technical Orders	• Technical manuals, in general, are considered adequate for support of the TISEO		• AN/APQ-130 flightline manuals provide insufficient data on system signal flow, test points (multiple manuals are required to trace signals) • AN/APG-63 intermediate level manuals do not provide adequate technical data (unit schematics are not provided, functional diagrams are not definitive enough, test station software inadequately described system built-in-test data lacking, etc.) • AN/APG-63 flightline manuals provide insufficient data on built-in-test • AN/APG-63 modifications and software changes are not documented in a timely fashion (modified units received from depot are checked bad on intermediate level test equipment using wrong test specifications)

ANALYSIS: WEAPONS CONTROL EQUIPMENT
(AN/APG-63, AN/APQ-130 Radar Sets and TISEO)

AREA	POSITIVE	QUESTIONABLE	NEGATIVE
Training & Personnel Skills Level	• Intermediate level technicians assist with TISEO scheduled inspections to gain system-level experience • Extensive training/experience is not required to gain sufficient skills for TISEO repairs on the flightline or in the shop (camera technicians are learning TISEO maintenance procedure; training requirements are not extensive due to 4-unit complexity, manual test sets, simple repair concept, good manuals)	• Intermediate level maintenance could be more effective if system-level training/experience was provided (AN/APG-63)	• Extensive on-the-job training is required before maintenance proficiency is gained (AN/APG-130 and AN/APG-63)
Troubleshooting Methods	• Flightline personnel are successful using built-in-tests and operational checks with substitution of units (preferred flightline technique requiring no flightline test equipment and minimal technical data) • Flightline personnel get functional tests of all suspected units by the intermediate level shop (secondary technique used when spares are not available for substitution in aircraft) • Functional testing, diagnostic tests, logical analysis and substitution are used at intermediate/depot levels to isolate faulty modules/components in the units	• Signal tracking, continuity checks, cross-referencing between good and bad units and other logical analysis techniques (required to supplement fault-diagnostic procedures and test routines available at the intermediate level • AN/APG-63 built-in-test fault-diagnostics have a 70-80% probability of indicating defective unit	• Test equipment (collimator as target source) is required on flightline for TISEO checks in low-light level conditions • AN/APQ-130 built-in-test fault diagnostics are ineffective in identifying defective unit (presence but not cause of fault can be determined) • Hot mock-up utilization is required to resolve problems of inconsistent test results between built-in-test on the aircraft and unit functional checks on a test station in the shop (AN/APQ-130 and AN/APG-63) • A significant amount of logical analysis of malfunctions is required to supplement automatic diagnostics provided on intermediate test stations (AN/APQ-130)

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ANALYSIS: WEAPONS CONTROL EQUIPMENT
(AN/APG-63, AN/APQ-130 Radar Sets and TISEO)

AREA	POSITIVE	QUESTIONABLE	NEGATIVE
Troubleshooting Methods (continued)			• Interface test set provided for fault-isolation of TISEO system in the aircraft is not utilized (poor accessibility to interface connectors in the aircraft and amount of supporting equipment required are the reasons)

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SECTION V

MAINTENANCE ITEM AREA TREND ANALYSIS

TREND EVALUATION: ACCESSIBILITY

Weapon System	Avionics Subsystem	Analysis Summary: Positive	Analysis Summary: Questionable	Analysis Summary: Negative	Overall Assessment	Trend Analysis
F-4E	KS-97A Radar Scope Camera System	• LRUs in cockpit • Filmpack in cockpit • LRU remove/replace ≈ 5-10 min.		• Scope mounting of LRUs • Out-of-site connector	Positive	1. Accessibility to LRUs for removal or replacement is, in general, good (5-10 minute access times) but when access times become greater than 15 minutes (example: TISEO) maintenance is delayed. 2. Retrofitted equipment to a weapon system (such as the TISEO) is more likely to exhibit poor accessibility. 3. Rack mounted equipment in electronics compartments sealed by doors with latches provides the best accessibility. Access panels, in general, are less satisfactory than doors. The large number of fasteners and undersize openings provided by access panels hinder maintenance. 4. Accessibility technology (fasteners, latches, door/panel designs, etc.) advancements over time from 60s to 70s not apparent. Small improvements in accessibility have been achieved through refinements of old ideas (swing-away radomes,
	AN/ASX-1 TISEO	• Direct access to LRU in cockpit		• Special fastener tools • Undersize access panel • Number of panel fasteners • In-the-wing LRU • LRU remove/replace ≈ 5-60 min.	Negative	
C-5A	AN/ARC-109 Radio Set	• Flight deck equipment location • Stand-up maintenance in electronic's compartments • Racked equipment • LRU remove/replace ≈ 5-10 min.		• Antenna switching relay location	Positive	
	MARK V TACAN	• Flight deck equipment location • Stand-up maintenance in electronic's compartments			Positive	

TREND EVALUATION: ACCESSIBILITY (continued)

Weapon System	Avionics Subsystem	Analysis Summary: Positive	Questionable	Negative	Overall Assessment	Trend Analysis
C-5A (cont)	MARK V TACAN (cont)	• Racked equipment LRU remove/replace ≈ 5-10 min.				4. (cont) etc.). One exception is the AN/ARC-164 receiver/transmitter which, due to its cockpit location, provides almost optimum accessibility. 5. Electronic LRUs are ideally located for access when placed in shoulder-height forward electronics compartments. Accessibility deteriorates with height above ground and aft around engines, wings, gear, etc. 6. Camera systems with recording medium (film pack, tape cassette, etc.) accessible to aircrew in cockpit offers advantages over systems with recording medium accessible only to maintenance. 7. **Greater use of micro-electronics (AN/ARC-164 and AN/ARN-118 are examples) is indirectly contributing to improved accessibility. LRUs are becoming smaller and lighter which is contributing to less crowded equipment bays and leads to location of more equipment in bays (with doors) rather than behind access panels.**
	KB-18A Strike Camera System	• LRUs in lower forward compartments • Direct access to control unit in cockpit	• Film-pack inaccessible to aircrews • Test panel not co-located with camera • LRU remove/replace ≈ 10-20 min.	• Wire bundle hinders access in avionics bay	Questionable	
F-111D	AN/APQ-130 Radar	• Co-location of LRUs in electronics bay • Swing-away radome • Direct access to control unit in cockpit	• Number of fasteners on electronics bay door • Fuzes on back of antenna • LRU remove/replace ≈ 10-20 min. (excluding antenna)	• Poor accessibility to rack connectors and fittings	Questionable	
F-15	AN/APG-63 Radar	• Co-location of LRUs in electronics bay • Swing-away radome • Access door with quick-release latches • Direct access to control unit in cockpit			Positive	

TREND EVALUATION: ACCESSIBILITY (continued)

Weapon System	Avionics Subsystem	Analysis Summary			Overall Assessment	Trend Analysis
		Positive	Questionable	Negative		
F-15 (cont)	AN/APG-63 Radar (cont)	• LRU remove/replace ≈5-10 min. (excluding antenna)				8. Accessibility is best in the large transport aircraft. As the aircraft size is reduced, accessibility problems are more likely.
	AN/AWG-20 Armament Control	• Electronics bay LRU location • Cockpit LRU location • Quick release latches on door • Direct access in cockpit • LRU remove/replaces ≈5-10 min.	• Insufficient service loop for cockpit LRU		Positive	
F-16	AN/ARC-164 Radio	• Direct access in cockpit to LRU • LRU remove/replace ≈5-10 min.		• Antenna switching relay location	Positive	
	AN/ARN-118 TACAN	• Direct access in cockpit • Electronics bay LRU location	• LRU remove/replace ≈5-20 min.	• Number of fasteners on electronics bay door	Positive	

TREND EVALUATION: AGE OF SYSTEM AND TECHNOLOGY

Weapon System	Avionics Subsystem	Analysis Summary: Positive	Analysis Summary: Questionable	Analysis Summary: Negative	Overall Assessment	Trend Analysis
F-4E	KS-97A Radar Scope Camera System	• Solid-state electronics • No system-level adjustments • Fixed lense system • Vendor supplied film pack	• Electro-mechanical • Analog signal processing • Late-60s design • Hardware age ≥ 10 years	• Rotary switches in control unit • Film processing • No plug-in modules	Positive	1. Integration of components has progressed from use of discretes in late-60s to medium-scale integration in mid-70s leading to the following secondary trends: • Improving reliability • Smaller, lighter LRUs • Reduced cooling requirements • Higher packaging density
	AN/ASX-1 TISEO	• Solid-state electronics (ICs and hybrids) • Early-70s design • Hardware age ≤ 5 years • Interconnection cables • Plug-in modules • Quick disconnect fasteners	• Analog signal processing • Electro-mechanicals	• System-level adjustments	Questionable	2. Analog signal processing is being superceded by digital techniques with secondary trends as follows: • Improved reliability • Improved testability • Increased complexity
C-5A	AN/ARC-109 Radio Set	• Solid-state electronics • Quick-release fasteners/connectors • Plug-in modules	• Late 60s-early 70s design • Hardware age ≥ 5 years	• Rotary switches in control unit • Electro-mechanical servo tuner • Analog signal processing • Electronic cooling air • Pressurized case	Questionable	3. Hardwired to reprogrammable signal processing with secondary trends: • Increasing software emphasis • Simplified incorporation of system changes • Higher software change rate • More difficult configuration control

TREND EVALUATION: AGE OF SYSTEM AND TECHNOLOGY (continued)

Weapon System	Avionics Subsystem	Analysis Summary: Positive	Analysis Summary: Questionable	Analysis Summary: Negative	Overall Assessment	Trend Analysis
C-5A (cont)	MARK V TACAN Set	• Solid-state electronics • Non-pressurized case • No electro-mechanical tuning servo • Digital signal processing	• Early-70s design • Cooling air required • Analog signal processing	• Rotary switches on control unit	Questionable	4. Electro-mechanical functions are being replaced with electronics leading to: • Simplified repair • Higher reliability • Smaller packages 5. Quick-release connectors, fasteners and fittings are now being used extensively to: • Eliminate tool requirements • Eliminate safety wire • Reduce remove/replace times 6. Rotary switches have been phased out in only a few applications and still present the following problems: • Loose knobs and tools in cockpit • Lower reliability through use of mechanical rather than electronic switches • Repair problems due to wiring density and complexity 7. Interconnection technology for SRAs has advanced from point-to-point, discrete wires through wire-wrap assemblies to flat-ribbon cables which eliminate
	KB-18A Strike Camera System	• Solid-state electronics • Lack of system-level adjustments • Fixed-focus lenses • Vendor loaded film-pack • Plug-in modules	• Electro-mechanicals • Analog signal processing • Hardware age ≥ 5 years • Late-60s design	• Rotary switches • Film recording medium	Questionable	
F-111D	AN/APQ-130 Radar	• Solid-state electronics • Quick-disconnect fittings • Quick-release fasteners (safety wire used) on LRUs • Plug-in modules	• Analog signal processing • Minature coaxial cables • Temperature sensitive system	• Late-60s design • Hard-wired signal processor • Inter-rack wiring • Out-of-production hybrids • SRA marriage problems • Less than predicted reliability • Liquid cooled LRUs • Hardware age ≥ 10 years	Negative	

TREND EVALUATION: AGE OF SYSTEM AND TECHNOLOGY (continued)

Weapon System	Avionics Subsystem	Analysis Summary: Positive	Analysis Summary: Questionable	Analysis Summary: Negative	Overall Assessment	Trend Analysis
	AN/APG-63 Radar	• Early-70s design • Solid-state components with hybrids and ICs • Programmable processor • No inter-rack wiring • Quick-disconnect fittings • Quick-release fasteners (without safety wire) on LRUs • Digital signal processing • Plug-in modules	• Flat ribbon cable interconnecting modules	• Liquid cooled LRUs	Positive	7. (cont) chassis wiring entirely which leads to: • Increased provisioning requirements • Chassis wiring checks replaced by substitution methods • Reduced repair times • Higher parts cost 8. LRU interconnection technology exhibits no real trend. Point-to-point rack wiring and discrete-wire bundles are being used to interconnect LRUs presently.
F-15	AN/AWG-20	• Solid-state electronics (extensive use of hybrids and ICs) • Plug-in modules • Wire-wrap technique for wiring between SRAs • Digital signal processing • Quick-disconnect fittings • Quick-release fasteners on LRUs (no safety wire)	• Late-60s design • Hardware age ≥ 5 years • Hard-wired processor control logic		Positive	

TREND EVALUATION: AGE OF SYSTEM AND TECHNOLOGY (continued)

Weapon System	Avionics Subsystem	Analysis Summary: Positive	Analysis Summary: Questionable	Analysis Summary: Negative	Overall Assessment	Trend Analysis
F-16	AN/ARC-164 Radio	• Mid-70s design • Solid-state electronics (hybrids and ICs) • No forced cooling air required • No electro-mechanical tuners • No chassis wiring • Ultra-simplified modularity • Quick-release fasteners and connectors • Hardware age < 5 years • Non-pressurized case	• Flat ribbon cable interconnecting modules	• Rotary switches • Analog signal processing	Positive	
	AN/ARN-118 TACAN	• Mid-70s design • Solid-state electronics (hybrids and ICs) • No forced cooling air required • No electro-mechanical tuner • Quick release fasteners (no safety wire) • Quick-release connectors	• Some analog signal processing • Rack wiring	• Rotary switches	Positive	

TREND EVALUATION: AGE OF SYSTEM AND TECHNOLOGY (continued)

Weapon System	Avionics Subsystem	Analysis Summary			Overall Assessment	Trend Analysis
		Positive	Questionable	Negative		
F-16 (cont)	AN/ARN-118 TACAN (cont)	• No forced cooling are required • No electro-mechanical tuner • Quick release fasteners (no safety wire) • Quick release connectors • Hardware age < 5 years • Non-pressurized case				

TREND EVALUATION: DEBRIEFING

Weapon System	Avionics Subsystem	Analysis Summary: Positive	Analysis Summary: Questionable	Analysis Summary: Negative	Overall Assessment	Trend Analysis
F-4E	KS-97A Radar Scope Camera System	• Simple, standardized write-ups describe camera malfunctions • Debriefing can be accomplished by personnel having no camera maintenance experience • Camera shop personnel are not required to assist debriefing	• Coordination required between debriefing, film processing shop and film evaluator (debriefing fault-isolates between filmpack and camera)	• Camera status cannot be determined during debriefing (due to film processing/evaluation delays) which results in delayed write-ups	Questionable	1) Increasing system functional complexity leads to: • Reduced debriefing effectiveness (errors, etc.) • Increasing need for debriefer to have had maintenance experience • Increasing need for technical advice from outside sources (for aircrews and debriefers) 2) Increasing BIT capabilities does not lead to improved debriefing, but in fact, seems to reduce debriefing effectiveness by adding system functional complexity (debriefers must consider BIT problems in addition to the operational malfunctions) 3) Increasing delays in determining system status (due to film processing, film assessment, etc.) reduce effectiveness of debriefing. Delays greater than 30 minutes can be significant (not uncommon) 4) Various communication systems have been tried (to improve transmittal of write-ups to maintenance control and shops) but, the trend appears to be away from such equipment and back to the telephone. In some cases, write-ups are simply hand-carried to maintenance control by debriefers.
	AN/ASX-1 TISEO	• Status determined/ reported by aircrew		• Debriefers should have some TISEO maintenance experience • Insufficient malfunction description entered on debriefing forms • Interrelated, complex malfunctions • Technical advice not available in debriefing	Questionable	

TREND EVALUATION: DEBRIEFING

Weapon System	Avionics Subsystem	Analysis Summary: Positive	Questionable	Negative	Overall Assessment	Trend Analysis
C-5A	AN/ARC-109 Radio Set	• Simple, standardized write-ups • Status determined/ reported by aircrew • Debriefers do not require radio maintenance experience • Radio shop personnel not required to assist debriefers • Coordination not required			Positive	5) Quality of debriefing continues to be a problem which affects maintenance of complex subsystems (such as radar). Debriefing quality does not impact maintenance of the less complex subsystems such as communication or navigation. 6) Automatic malfunction processing systems such as the Malfunction Detection Analysis and Recording (MADAR)/Ground Processing System (GPS) used for the C-5A do not improve debriefing effectiveness. The system supplements but does not replace normal debriefing procedures.
	MARK V TACAN Set	• Simple, standardized write-ups • Status determined/ reported by aircrews • Debriefers do not require TACAN maintenance experience • Nav shop personnel not required to assist debriefing • Coordination not required	• Some interrelated malfunctions		Positive	

TREND EVALUATION: DEBRIEFING

Weapon System	Avionics Subsystem	Analysis Summary: Positive	Analysis Summary: Questionable	Analysis Summary: Negative	Overall Assessment	Trend Analysis
F-111D	KB-18A Strike Camera System	• Simple, standardized write-ups • Debriefers do not require camera maintenance experience • Camera shop representative not required in debriefing	• Coordination between shops and debriefing	• No camera status during debriefing • Delayed write-ups	Questionable	
	AN/APQ-130 Radar	• Status determined/ reported by aircrew		• Complex malfunctions • Debriefers require radar maintenance experience • Technical advise required in debriefing • Coordination with shops required • Insufficient data on debriefing forms	Negative	
	AN/APQ-63 Radar	• Status determined/ reported by aircrew		• Complex malfunctions • Insufficient information logged on forms	Negative	

TREND EVALUATION: DEBRIEFING

Weapon System	Avionics Subsystem	Analysis Summary: Positive	Analysis Summary: Questionable	Analysis Summary: Negative	Overall Assessment	Trend Analysis
F-15				• Technical advise required in debriefing • Coordination with shops required • Insufficient data on debriefing forms • Maintenance experience required		
	AN/AWG-20 Armament Control	• Simple, standardized write-ups	• Some technical advise required in debriefing	• Complex interrelated malfunctions • Insufficient data in debriefing forms • Maintenance background is required	Questionable	
F-16	AN/ARC-164 Radio Set	• Simple, standardized write-ups • Status determined/ reported by aircrew • Maintenance experience not essential • Technical advise not required in debriefing • No coordination with shops required			Positive	

TREND EVALUATION: DEBRIEFING

Weapon System	Avionics Subsystem	Analysis Summary			Overall Assessment	Trend Analysis
		Positive	Questionable	Negative		
	AN/ARN-118 TACAN Set	• Simple, standardized write-ups • Status determined/ reported by aircrew • Maintenance experience not essential • Technical advise not required • No coordination with shops required			Positive	

TREND EVALUATION: DEPOT SUPPORT

Weapon System	Avionics Subsystem	Analysis Summary: Positive	Analysis Summary: Questionable	Analysis Summary: Negative	Overall Assessment	Trend Analysis
F-4E	KS-97A Radar Scope Camera System	• LRU repairs beyond I-level shop capability • More extensive test capability than I-level shops • Single depot shop			Positive	1) Repair of LRUs remains primarily an intermediate level function, however, depot repair of LRUs is becoming more feasible due to improving reliability (example: AN/ARN-118 TACAN RIW program). 2) Repair of SRUs is being shifted almost entirely to the depot shops from the intermediate level shops. 3) Quality of depot level support decreases (as perceived by I-level) as differences in the I-level and depot test concepts for SRUs become larger. Utilizing I-level LRU test sets at the depot for final SRA checkout minimizes the I-level rejection rate. Not performing a final SRU checkout at the LRU level in the depot shop results in a high I-level rejection rate.
	AN/ASX-1 TISEO	• LRU repair beyond I-level shop capability • All SRU repairs • Test capability (for SRUs) beyond I-level shop capability • Single depot shop	• LRUs/SRUs received by I-level shops require realignment • Some LRU test capability as I-level shops	• Inadequate spares in supply system	Questionable	
C-5A	AN/ARC-109 Radio Set	• LRU repairs beyond I-level shop capability • SRU repairs beyond I-level shop capability • Single depot shop	• Same LRU and SRU test capability as I-level shops • Some SRU repair in I-level shops		Questionable	
	MARK V TACAN Set	• LRU repairs beyond I-level shop capability • All SRU repairs	• Same LRU tests capability as I-level shop		Positive	

TREND EVALUATION: DEPOT SUPPORT

Weapon System	Avionics Subsystem	Analysis Summary: Positive	Analysis Summary: Questionable	Analysis Summary: Negative	Overall Assessment	Trend Analysis
		• Single depot shop • More extensive test capability (for SRUs) than field shops				
F-111D	KB-18A Strike Camera System	• LRU repairs beyond field shop capability • SRU repairs beyond field shop capability • Single depot shop • LRU and SRU test capability beyond field shops	• Some SRU repair in field shops		Questionable	
	AN/APQ-130 Radar	• LRU repairs beyond field shop capability • All SRU repairs • LRU/SRU test capability beyond field shop capability	• Two depot shops (one for LRUs and one for SRUs)	• Inadequate spares in supply system • High reject rate for items received from depot at field shop (test tolerance incompatibilities)	Negative	
F-15	AN/APQ-63 Radar	• LRU repairs beyond field shop capability • All SRU repairs • LRU/SRU test capability beyond field shop capability				

TREND EVALUATION: DEPOT SUPPORT

Weapon System	Avionics Subsystem	Analysis Summary: Positive	Analysis Summary: Questionable	Analysis Summary: Negative	Overall Assessment	Trend Analysis
		• Single depot shop				
	AN/AWG-20 Armament Control	• LRU repairs beyond field shop capability • All SRU repairs • LRU/SRU test capability beyond field shop capability • Single depot shop		• Inadequate spares in supply system		
F-16	AN/ARC-164 Radio Set	• LRU repairs beyond field shop capability • All SRU repairs • SRU test capability beyond field shop capability • Single depot shop	• LRU test capability same as field shops	• Initial depot ship planning did not provide LRU repair capability	Positive	
	AN/ARN-11B TACAN Set	• All LRU repairs at depot (Collins) • Single depot			Positive	

TREND EVALUATION: PRE-, IN-, POST-FLIGHT INSPECTIONS

Weapon System	Avionics Subsystem	Analysis Summary			Overall Assessment	Trend Analysis
		Positive	Questionable	Negative		
F-4E	KS-97A Radar Scope Camera System	• Aircrew performs operational checks • Lack of maintenance inspection equipments • BIT	• Film remaining warning, light rather than counter	• Positive indication of proper operation not available to aircrew	Positive	1) Preflight inspection of avionics equipment by maintenance personnel is not required with two exceptions, cameras and armament control. Maintenance checks camera operation following film-pack installation and weapons stations are checked as part of weapons loading. The general trend, however, is to preflight checks performed by the aircrew with little or no maintenance support acquired.
	AN/ASX-1 TISEO	• Aircrew performs operational checks • Lack of maintenance inspection requirements • BIT • Constant fault-monitoring		• BIT/operational tests and feasible in low-light conditions • Aircrew boresighting	Questionable	
C-5A	AN/ARC-104 Radio Set	• Aircrew performs operational checks • Lack of maintenance inspection requirements	• Qualitative checks only (no BIT for quanitative checks) • No constant fault-monitoring		Positive	2) Preflight and inflight system checks are normally performed by the aircrews using operational checkout procedures. These checks are normally limited to systems and modes specifically required for the mission at hand.
	MARK V TACAN Set	• Aircrew performs operational checks • No maintenance inspections • BIT	• TACAN interface with automatic navigation system not checked • No constant fault-monitoring		Positive	3) BIT functions, unless automatically initiated by the system, might not be utilized by the aircrew. Aircrews tend to consider BIT as a maintenance aid and only the more experienced aircrew will provide debriefing with BIT failure data. (continued on next page)

TREND EVALUATION: PRE-, IN-, POST-FLIGHT INSPECTIONS (continued)

Weapon System	Avionics Subsystem	Analysis Summary			Overall Assessment	Trend Analysis
		Positive	Questionable	Negative		
F-111D	KB-18A Strike Camera System	• Aircrew performs operational checks		• No BIT from cockpit • Two men for operational checkout • Maintenance check following film loading • No BIT from camera compartment	Negative	4) Postflight inspection (of aircrew reported malfunctions) is accomplished in some cases as part of a quick-fix operation intended to clear malfunctions prior to aircrew debriefing. Such procedures, where utilized, are the result of low system reliability.
	AN/APQ-130 Radar	• Aircrew performs operational checks • No maintenance inspections • BIT • Constant fault-monitoring			Positive	5) BIT failures represent a significant aid to performance of system inspection (by the aircrew) if operation is automatic to provide status of system. BIT which requires manual initiation and interpretation of displays increases the aircrew workload, extends the preflight inspection time, increases ground operating time and is therefore, less preferable.
F-15	AN/APG-63 Radar	• Aircrew performs operational checks • No maintenance inspections • BIT • Constant fault-monitoring			Positive	
	AN/AWG-20 Armament Control	• Constant fault-monitoring • No maintenance inspections	• Stray voltage checks required		Positive	

(continued on next page)

TREND EVALUATION: PRE-, IN-, POST-FLIGHT INSPECTIONS (continuted)

Weapon System	Avionics Subsystem	Analysis Summary			Overall Assessment	Trend Analysis
		Positive	Questionable	Negative		
F-16	AN/ARC-164	• Aircrew performs operational checks • No maintenance inspections	• Qualitative check only (no BIT for quantitative checks) • No constant fault-monitoring		Positive	
	AN/ARN-118	• Aircrews perform operational checks • No maintenance inspections • BIT			Positive	

TREND EVALUATION: LEVEL OF BASE REPAIR

Weapon System	Avionics Subsystem	Analysis Summary: Positive	Analysis Summary: Questionable	Analysis Summary: Negative	Overall Assessment	Trend Analysis
F-4E	RS-97A Radar Scope Camera System	• System repair by LRU replacement. • No system alignments in the aircraft. • Electro-mechanical components replaced in the intermediate shop.	• Electronic components replaced in the intermediate shop. • Depot repair similar to intermediate level repair.	• Inspect/repair-as-necessary every 600 flying hours.	Questionable	• System-level repairs are becoming less complex as system alignments are eliminated. Most systems presently have no requirements for alignments in the aircraft so that most malfunctions can be readily corrected by replacing a detective LRU. • System level repair becomes simplier as the number of LRUs is reduced. Systems consisting of 4 or more LRUs are rated as difficult to repair. Systems with fewer than 4 LRUs are significantly less difficult to repair and the ideal system consists of one LRU. • SRU replacement but no repair authorized is the repair concept presently most satisfactory at intermediate level. Limiting intermediate maintenance to LRU fault-verification results in under-utilization of test equipment and skills. SRU repair at intermediate level, however, results in excessive demands on skills available in the intermediate shop.
	AN/ASX-1 TISEO	• System repair by LRU replacement. • LRU repair by SRU replacement (or alignment) in intermediate shop. • SRU repair by component replacement in depot shop.		• Some system-level alignments in aircraft. • System repair is unnecessarily difficult (poor accessibility hinders troubleshooting and LRU replacement). • Inspect/repair-as-necessary is accomplished every 90 days.	Positive	

TREND EVALUATION: LEVEL OF BASE REPAIR

Weapon System	Avionics Subsystem	Analysis Summary			Overall Assessment	Trend Analysis
		Positive	Questionable	Negative		
C-5A	AN/ARC-109 Radio Set	• System repair by LRU replacement. • No system-level alignments. • LRU repair by SRU replacement. • Depot repair of LRUs/SRUs by component replacement. • No scheduled maintenance.	• Some SRUs repaired by component replacement in intermediate shop. • Some SRUs beyond intermediate level repair capability		Questionable	• Scheduled maintenance of avionics equipment, except for a few time change items such as dissecant, is no longer required. In general, scheduled maintenance of avionics subsystems is undesirable because of the lack of evident, positive impact on system reliability. • LRU repairs at depots rather than in the intermediate shops is becoming more feasible. High reliability and adequate spares at the intermediate level appear as the most significant factors to the success of this repair concept.
	MARK V Tacan Set	• System repair by LRU replacement. • System-level alignments not required. • LRU repair by SRU replacement in intermediate shop. • SRU repair at depot by circuit board replacement. • No scheduled maintenance.	• Circuit boards are discarded at depot.	• Control unit not intermediate level repairable. • Chassis (of receiver/transmitter) precludes intermediate level repair.	Positive	

TREND EVALUATION: LEVEL OF BASE REPAIR

Weapon System	Avionics Subsystem	Analysis Summary			Overall Assessment	Trend Analysis
		Positive	Questionable	Negative		
F-111D	KB-18A Strike Camera System	• System repair by LRU replacement. • No system-level alignments. • LRU repair by SRU replacement in intermediate shop. • Electro-mechanical components replaced in intermediate shop.	• SRUs repaired at intermediate level by electronic component replacement. • Depot repair similar to intermediate repair.	• Inspect/repair-as-necessary every 125 flying hours	Questionable	
	AN/APQ-130 Radar Set	• System repair by LRU replacement. • Very few system-level adjustments. • LRU repair by SRU replacement in intermediate shop. • SRU repair at depot by component replacement. • No scheduled maintenance.		• System repair is excessively difficult. • Quick-fix concept is used for system level repairs. • Intermediate shop has difficulty duplicating system malfunctions. • Depot repaired items have a high rejection rate at intermediate level.	Positive	

TREND EVALUATION: LEVEL OF BASE REPAIR

Weapon System	Avionics Subsystem	Analysis Summary: Positive	Analysis Summary: Questionable	Analysis Summary: Negative	Overall Assessment	Trend Analysis
F-15	AN/APG-63 Radar Set	• System repair by LRU replacement. • LRU repair by SRU replacement in intermate shop. • SRU repair at depot by component replacement. • No scheduled maintenance		• Intermediate shop has difficulty duplicating system malfunctions. • Depot repaired items have high rejection rate at intermediate level.	Positive	
	AN/AWG-20 Armament Control	• System repair by LRU replacement. • LRU repair by SRU replacement in intermediate shop. • SRU repair at depot by component replacement. • No scheduled maintenance.				

TREND EVALUATION: LEVEL OF BASE REPAIR

Weapon System	Avionics Subsystem	Analysis Summary: Positive	Analysis Summary: Questionable	Analysis Summary: Negative	Overall Assessment	Trend Analysis
F-16	AN/ARC-164 Radio	• System repair by LRU replacement. • LRU repair by SRU replacement in intermediate shop. • SRU repair by component replacement at depot. • No system-level alignments. • No scheduled maintenance.			Positive	
	AN/ARN-118	• System repair by LRU replacement. • LRU repair at Collins depot. • No system-level alignments. • No scheduled maintenance.			Positive	

TREND EVALUATION: MAINTAINABILITY CHARACTERISTICS OF EQUIPMENT DESIGN

Weapon System	Avionics Subsystem	Analysis Summary: Positive	Analysis Summary: Questionable	Analysis Summary: Negative	Overall Assessment	Trend Analysis
F-4E	KS-97A Radar Scope Camera System	• 2 LRUs • No system-level alignments • BIT (manually initiateable)		• No plug-in electronic subassemblies	Positive	1) System maintainability is directly related to the number of LRUs. Systems consisting of 1-3 LRUs are easily maintained. Systems with 4 or more LRUs are at least moderately difficult to maintain. Systems with 8 or more LRUs are considered difficult to maintain and are a problem for the maintenance organizations.
	AN/ASX-1 TISEO	• BIT (constant fault-monitoring) • Plug-in electronic SRUs used extensively • LRU concept	• 4 LRUs • BIT fault-isolation connector in cockpit	• System-level alignments • No BIT capability for low-level light conditions	Questionable	
C-5A	AN/ARC-109 Radio Set	• 2 LRUs • No system-level alignments • Plug-in electronic SRUs used extensively in receiver/transmitter • BIT meter • Redundant radio sets in C-5A		• Control unit difficulty of repair (due to multi-wafer rotary switch complexity)	Positive	2) Difficulty of system fault-isolation, which increases proportionately to the number of LRUs, is the single most important factor by which flightline maintenance personnel rate system maintainability. Other factors such as BIT, accessibility, etc. seem to be secondary.
	MARK V TACAN Set	• 2 LRUs • System-level alignments not required • Plug-in electronic SRUs used extensively in receiver/transmitter	• System-level alignments and procedures • Test connector on receiver/transmitter	• Control unit difficulty of repair (due to multi-wafer rotary switch complexity)	Positive	3) BIT functions to provide go/no-go (operational) tests are an aid to maintenance because of the reduced test equipment requirements. BIT diagnostics, however, has met with very limited success and has not

TREND EVALUATION: MAINTAINABILITY CHARACTERISTICS OF EQUIPMENT DESIGN

Weapon System	Avionics Subsystem	Analysis Summary: Positive	Analysis Summary: Questionable	Analysis Summary: Negative	Overall Assessment	Trend Analysis
C-5A (Cont)	MARK V TACAN Set (Con't)	• BIT (manually initiateable in cockpit) • Plug-in circuit boards used extensively in SRUs • Redundant TACAN sets in C-5A	• No BIT meter on receiver/transmitter (aids fault-isolation) • BIT does not provide constant status monitoring	• Receiver/transmitter chassis difficulty of repair (due to accessibility problems caused by cooling air plenum)		done much to improve system maintainability with one exception. Fault-indicators (flags) on each LRU which indicate BIT failure, as used in the AN/APG-63 radar, are a definite aid to fault-isolation of BIT failures and improve system maintainability.
	KB-18A Strike Camera System	• 2 LRUs • No system-level alignments • BIT (manually initiateable) • Plug-in electronic SRUs used extensively in control unit	• BIT does not provide constant status-monitoring	• BIT initiation/monitoring from avionics bay rather than cockpit • Unused hardware/functions not modified out of system	Questionable	4) Maintenance personnel prefer BIT functions which are automatically initiated by the system, store failure data for use after flight, and provide a positive indication of LRU status (failure flag, etc.) on each LRU tested.
F-111D	AN/APQ-130 Radar	• BIT (constant fault-monitoring) • BIT (fault-diagnostics) • LRU concept • Plug-in electronic SRUs used extensively • Limited system-level alignments required	• 8 LRUs • BIT controls in cockpit only • Fuses rather than breakers for overload protection	• LRU handling problems (excessive weight of receiver/transmitter, antenna alignments affected by handling)	Negative	5) Racked LRUs interconnected by cables represents a good maintainability design. None-racked LRUs exhibit poor accessibility and higher removal/installation times. Racked LRUs interconnected by rack wiring exhibit good accessibility and low removal/installation times but are plagued by LRU seating and rack wiring problems.

TREND EVALUATION: MAINTAINABILITY CHARACTERISTICS OF EQUIPMENT DESIGN

Weapon System	Avionics Subsystem	Analysis Summary			Overall Assessment	Trend Analysis
		Positive	Questionable	Negative		
F-111D (Cont)			• Transmitter liquid coolant system (requires hydraulic shop support, time consuming servicing on aircraft and in shop, hinders transmitter maintenance in shop, etc.) • Flat-ribbon cable interconnecting SRUs (easily broken) • Poor quality connector pin extractor/ insertion tools	• Rack associated problems (repair of LRU fasteners, LRU seating, difficulty of rack removal/ installation, etc.) • Connector repair difficulties (pins are difficult to replace due to problem with tools) • BIT fault-isolation capability (inadequate/ inaccurate) • Wiring problems		6) System-level alignments have, in general, been eliminated. Where still required, they are definitely considered to detract from system maintainability. The trend is to accomplishment of LRU analog circuit alignment in the intermediate shop. Alignments are not performed at the aircraft unless absolutely necessary. LRU/SRU alignments performed at a depot are normally checked and realigned, if required, by the intermediate level. 7) LRUs with plug-in electronic modules (SRUs) are more maintainable than units without the plug-ins. However, the most maintainable design eliminates the LRU chassis (which cannot be treated as an SRU) and consists entirely of SRUs. In such an LRU, the SRUs fasten directly to each other and are interconnected by cable assemblies which are protected by a cover.

TREND EVALUATION: MAINTAINABILITY CHARACTERISTICS OF EQUIPMENT DESIGN

Weapon System	Avionics Subsystem	Analysis Summary			Overall Assessment	Trend Analysis
		Positive	Questionable	Negative		
F-15	AN/APG-63 Radar	• LRU concept • BIT (constant fault-monitoring) • BIT (fault-diagnostics) • LRU fault-indicators • Plug-in electronic SRUs used extensively	• 9 LRUs • Transmitter liquid cooling system (requires hydraulic shop support, time consuming servicing on aircraft and in shop, hinders transmitter trouble-shooting in shop)	• LRU handling problem (excessive receiver/transmitter weight) • Connector repair difficulties (pins difficult to replace due to problem with tools) • LRU fasteners not repairable in intermediate shop • Pressurized power supply • BIT failure results are inconsistent • BIT range and angle checks insufficient • Waveguide dehumidification problems	Questionable	8) Wiring problems continue as a significant factor in maintenance of avionics systems. Problems arise because of the cumulative effects of vibration, pulling and bending stresses, chaffing chemical deterioration, etc. Wiring problems are also associated with system complexity. Low complexity systems (one to three LRUs) involve very few wiring problems. Higher complexity systems (4 or more LRUs) exhibit many more suspected/proven wiring problems.

TREND EVALUATION: MAINTAINABILITY CHARACTERISTICS OF EQUIPMENT DESIGN

Weapon System	Avionics Subsystem	Analysis Summary			Overall Assessment	Trend Analysis
		Positive	Questionable	Negative		
F-15 (Cont)	AN/AWG-20 Armament Control	• 2 LRUs • BIT (constant fault-monitoring and initiateable) • Plug-in electronic SRUs utilized extensively	• Poor quality connector pin extraction/ insertion tools	• BIT provides inadequate fault-isolation capability • Connector repair difficulties • Wiring problems (breakage at connectors)	Positive	
F-16	AN/ARC-164 Radio	• 1 LRU • No chassis • All components contained in 5 SRUs • Circuit boards used extensively in SRUs • No system-level alignments required in aircraft	• No BIT features • Flat ribbon cable interconnecting SRUs and circuit boards (easily broken during radio maintenance)		Positive	
	AN/ARN-118 TACAN Set	• 2 LRUs • BIT (manually initiateable in cockpit)	• No BIT meter on receiver/ transmitter		Positive	

TREND EVALUATION: MAINTENANCE DATA COLLECTION, DOCUMENTATION AND FEEDBACK SYSTEM

Weapon System	Avionics Subsystem	Analysis Summary			Overall Assessment	Trend Analysis
		Positive	Questionable	Negative		
F-4E	KS-97A Radar Scope Camera System	• Sortie data logged on debriefing forms • Maintenance data logged on 349s/350s • Periodic/special reports generated • Constant review/analysis not required • Debriefing forms create aircraft histories	• Camera operating hours per flight hour cannot be determined	• Real time analysis/reports generated manually • Aircraft history not available in camera shop	Positive	1) Low complexity, high reliability systems can be maintained effectively with little or no maintenance data analysis. Higher complexity, low reliability systems cannot be maintained effectively without implementing a comprehensive maintenance data analysis program. 2) All maintenance shops tend to maintain files for analysis purposes. Most shops will normally use 349 files for real time analysis and 349 summary reports for non-real time analysis. In addition to 349 files, those shops maintaining complex systems (such as radar sets) normally file and analysis debriefing forms to obtain real-time comprehensive malfunction/maintenance data.
	AN/ASX-1 TISEO	• Sortie data logged on debriefing forms • Debriefing forms create aircraft histories • Maintenance data logged on 349s/350s • Periodic/special reports generated	• Review/analysis required	• Real time analysis/reports generated manually	Questionable	

TREND EVALUATION: MAINTENANCE DATA COLLECTION, DOCUMENTATION AND FEEDBACK SYSTEM

Weapon System	Avionics Subsystem	Analysis Summary			Overall Assessment	Trend Analysis
		Positive	Questionable	Negative		
	AN/ARC-109 Radio Set	• Sortie data logged on debriefing forms • Debriefing forms create aircraft history • Maintenance data logged on 349s/350s • Periodic/special reports generated • Constant review/analysis not required	• NADAR/GPS provides automatic 349 generation (supplements debriefing activity)	• Real time analysis/reports generated manually • Aircraft history not available in radio shop	Positive	3) Periodic reports (which summarize debriefing forms and 349 data) are normally provided by an Analysis Section to the maintenance shops. Periodic reports are developed utilizing Automatic Data Processing techniques. Periodic reports can be generated on a weekly basis but most are produced monthly. 4) Special reports summarizing debriefing/349 data can also be generated by an Analysis Section. Special reports can be obtained within one or two days. Data can be arranged by aircraft tail number, malfunction, system, etc. 5) Periodic reports serve to satisfy maintenance management requirements. Special reports, if utilized, are normally directed toward providing maintenance shops with information which can be used to improve maintenance efficiency.
C-5A	MARK V TACAN Set	• Sortie data logged on debriefing forms • Debriefing forms create aircraft history • Maintenance data logged on 349s/350s • Periodic/special reports generated • Constant review/analysis not required • Operating time available for elapsed time indicators	• NADAR/GPS provides automatic 349 generation (supplements debriefing activity)	• Real time analysis accomplished manually • Aircraft history not available in navigation shop	Positive	

TREND EVALUATION: MAINTENANCE DATA COLLECTION, DOCUMENTATION AND FEEDBACK SYSTEM

Weapon System	Avionics Subsystem	Analysis Summary			Overall Assessment	Trend Analysis
		Positive	Questionable	Negative		
F-111D	KB-18A Strike Camera System	• Sortie data logged on debriefing forms • Debriefing forms create aircraft history • Maintenance data logged on 349s/350s • Periodic/special reports generated • Constant review/analysis not required	• System operating time cannot be determined	• Real time analysis accomplished manually	Positive	6) Maintenance shops, even when supported with periodic and special reports, find it essential to relie on files of forms (bulky, require constant updating, etc.) and manual analysis to provide real time data conveniently available to users on a reliable basis.
	AN/APQ-130 Radar	• Sortie data logged on debriefing forms • Debriefing forms create aircraft history • Maintenance data logged on 349s/350s • Periodic/special reports generated • Operating time can be determined from elapsed time indicators		• Constant review/analysis is required • Real time analysis accomplished manually	Negative	7) Malfunction data recorded on debriefing forms normally does not provide adequate *information* for maintenance. A need exists for in-flight recording of malfunction data to supplement data recorded in debriefing. Experience with in-flight recording systems (such as MADAR used in C-5A) indicates the feasibility of the in-flight recording concept while bringing out the requirement for refinements if such a system is to serve as a maintenance aid.

TREND EVALUATION: MAINTENANCE DATA COLLECTION, DOCUMENTATION AND FEEDBACK SYSTEM

Weapon System	Avionics Subsystem	Analysis Summary			Overall Assessment	Trend Analysis
		Positive	Questionable	Negative		
F-15	AN/APG-63 Radar	• Sortie data logged on debriefing forms • Debriefing forms create aircraft history • Maintenance data logged on 349s/350s • Periodic/special reports generated • Operating time can be determined from elapsed time indicators		• Constant review/analysis is required • Real time analysis accomplished manually	Negative	8) The existing maintenance data processing procedures are adequate for support of low complexity, high reliability systems where analysis requirements are minimal. However, where data pertains to high complexity systems, the burden of processing forms, accomplishing analysis, etc. in real time has a negative impact on maintenance efficiency.
	AN/AWG-20 Armament Control	• Sortie data logged on debriefing forms • Debriefing forms create aircraft history • Maintenance data logged in 349s/350s • Periodic/special reports generated	• System operating time cannot be determined	• Constant review/analysis is required • Real time analysis accomplished manually	Negative	

TREND EVALUATION: MAINTENANCE DATA COLLECTION, DOCUMENTATION AND FEEDBACK SYSTEM

Weapon System	Avionics Subsystem	Analysis Summary			Overall Assessment	Trend Analysis
		Positive	Questionable	Negative		
F-16	AN/ARC-164 Radio	• Sortie data logged on debriefing forms • Debriefing forms create aircraft history • Maintenance data logged on 349s/350s • Periodic special reports generated • Constant review/analysis not required	• System operating time cannot be determined	• Aircraft history not available in radio shop • Real time analysis accomplished manually	Positive	
	AN/ARN-118 TACAN Set	• Sortie data logged on debriefing forms • Debriefing forms create aircraft history • Maintenance data logged on 349s/350s • Periodic/special reports generated • Constant review/analysis not required • System operating time measured by elapsed time indicators		• Real time analysis accomplished manually • Aircraft history not available in navigation shop	Positive	

TREND EVALUATION: MAINTENANCE ORGANIZATION

Weapon System	Avionics Subsystem	Analysis Summary			Overall Assessment	Trend Analysis
		Positive	Questionable	Negative		
F-4E	KS-97A Radar Scope Camera System	• Two-level maintenance organization (with no O-level) can be utilized effectively • Three-level maintenance organization can be utilized effectively • Aircrews handle film			Positive	1) Based upon cost-effectiveness studies, generally, as system complexity (represented bv number of LRUs) increases, use of the three-level maintenance organization becomes more essential. Low complexity, high reliability systems can be effectively supported using a two-level maintenance organization (consisting of intermediate and depot shops). As system complexity increases, specialized maintenance functions for aircraft systems maintenance and LRU shop maintenance become necessary. Depot maintenance, which is clearly necessary for support of the majority of avionics equipment, is required because of LRU and LRU test equipment complexities and is not related directly to system complexity.
	AN/ASX-1 TISEO	• I-level shop personnel assist O-level personnel with periodic inspections		• Three-level maintenance organization is essential to effective maintenance	Questionable	

TREND EVALUATION: MAINTENANCE ORGANIZATION (Continued)

Weapon System	Avionics Subsystem	Analysis Summary			Overall Assessment	Trend Analysis
		Positive	Questionable	Negative		
C-5A	AN/ARC-109 Radio Set	• Two-level maintenance organization (with no O-level) can be utilized effectively • Three-level maintenance organization can be utilized			Positive	2) Test equipment complexity is a key factor driving requirements for specialized maintenance organizations. Utilizing similar or identical test equipment for LRU and SRU testing increases the feasibility of simplifying maintenance organization. Take as an example AN/ARC-109 radio maintenance. Intermediate and depot maintenance shops use identical hot mock-ups to accomplish LRU/SRU repair to the component level. The intermediate maintenance shop does, in fact, have the equipment to perform all depot level maintenance. The intermediate level radio shop also accomplishes the flightline maintenance. A one-level maintenance organization could, in fact, be used to repair the AN/ARC-109 radio set.
	Mark V Tacan Set	• Two-level maintenance organization (with no O-level) can be utilized • Three-level maintenance organization can be utilized			Positive	
	KB-18A Strike Camera	• Two-level maintenance organization (no O-level) can be utilized	• With two-level maintenance organization, I-level shop personnel are required on the		Questionable	

TREND EVALUATION: MAINTENANCE ORGANIZATION (Continued)

Weapon System	Avionics Subsystem	Analysis Summary			Overall Assessment	Trend Analysis
		Positive	Questionable	Negative		
F-111D		• Three-level maintenance organization can be utilized	flightline for servicing camera film			3) Low complexity, non-integrated systems (communications, navigation, reconnaissance, etc.) are, in general, presently being maintained by two-level maintenance organizations. High complexity, integrated systems (radar, armament control, etc.) are presently being maintained by three-level maintenance organizations.
	AN/APQ-130 Radar		• Aircraft transmitter cooling system responsibility share between avionics and hydraulics shops	• Three-level maintenance organization is essential for effective maintenance	Negative	
F-15	AN/APG-63 Radar		• Aircraft transmitter cooling system responsibility shared between avionics and hydraulics shops	• Three-level maintenance organization is essential for effective maintenance	Negative	
	AN/AWG-20 Armament Control			• Three-level maintenance organization is essential for effective maintenance	Negative	

TREND EVALUATION: MAINTENANCE ORGANIZATION (Continued)

Weapon System	Avionics Subsystem	Analysis Summary: Positive	Analysis Summary: Questionable	Analysis Summary: Negative	Overall Assessment	Trend Analysis
F-16	AN/ARC-164 Radio	• Two-level maintenance organization (no O-level) can be utilized • Three-level maintenance organization can be utilized			Positive	
	AN/ARN-118 TACAN Set	• Two-level maintenance organization (no O-level) can be utilized • Three-level maintenance organization can be utilized			Positive	

TREND Evaluation: Organizational Level AGE

Weapon System	Avionics Subsystem	Analysis Summary: Positive	Analysis Summary: Questionable	Analysis Summary: Negative	Overall Assessment	Trend Analysis
F-4E	KS-97A Radar Scope System	• No flightline equipment • Suitcase LRU test set in intermediate shop	• Optical alignment fixtures in intermediate level shop		Positive	1) LRU handling equipment requirements should be avoided. Maintenance personnel man-handle LRUs and will avoid using special equipment if at all possible
	AN/ASX-1 TISEO	• Reuseable shipping/storage container provides protection during flightline handling • Suitcase LRU test sets • SRU test sets in depot shop	• Same LRU test sets in intermediate and depot level shops	• Flightline test sets required control indicator, collimator, interface test sets)	Questionable	2) Receiver/transmitter units, optics assemblies and radar antennas are candidates for handling with equipment rather than man-handling. R/T units are presently man-handled and the special equipment is not considered essential. Antenna handling equipment has, however, proven to be an aid to maintenance and is utilized. Hoists are considered necessary for removal/installation of antennas when the antenna is more than approximately shoulder height. Antenna handling fixtures might be effective in minimizing antenna transportation and handling damage if a fragile antenna cannot be avoided.
C-5A	AN/ARC-10a Radio Set	• No special flightline test sets required • Common radio test instruments used the flightline checks • Interconnection test set (hot mock-up) used in an intermediate and depot shops	• Depot SRU test sets (same as LRU test sets)	• Interconnection test sets fabricated by using organizations	Positive	

TREND Evaluation: Organizational Level AGE

Weapon System	Avionics Subsystem	Analysis Summary			Overall Assessment	Trend Analysis
		Positive	Questionable	Negative		
C-5A (Cont'd)	Mark V TACAN Set	• No special flightline test sets required • Standard flightline TACAN test set used when required • Interconnection test set (hot mock-up) for LRU tests in intermediate and depot shops • SRU test sets for use in depot shop	• Overly complex displays/procedures for interconnection test set reported	• Problems with test cables and connectors on intermediate level test set reported	Questionable	Reuseable shipping/storage containers have been found to be effective for use in local transporation and handling of fragile optical units 3) Flightline test equipment utilization has been minimized or eliminated in many cases. Flightline maintenance personnel prefer not to use test equipment if at all possible even when its use is recommended.
F-111D	KB-18A Strike Camera System	• No flightline equipment required • Suitcase LRU test set for intermediate level shops		• Eratic operation of LRU test set reported	Positive	4) Flightline test equipment has been mostly replaced by BIT. Flightline technicians are now concerned about BIT throughness, inability to duplicate airborne problems, etc., and recognize the need for improved BIT of flightline test equipment.

TREND Evaluation: Organizational Level AGE

Weapon System	Avionics Subsystem	Analysis Summary			Overall Assessment	Trend Analysis
		Positive	Questionable	Negative		
F-111D (cont'd)	AN/APQ-130 Radar	• No special flight-line test sets required • Hot mock-up test set in intermediate shops	• Effectiveness of test stations in intermediate shops • Antenna handling equipment not provided (antenna alignments disturbed by handling)	• Receiver/transmitter handling equipment required • Inconsistency of test tolerances/philosophy between BIT, intermediate and depot testing • Insufficient test access provided by test station • Interface cable problems on test station • Transmitter cooling oil servicing equipment in intermediate shop is excessively slow	Negative	5) Hot mock-ups, where utilized, appear to be an effective aid to maintenance. When hot mock-ups are not utilized, the intermediate level maintenance shop cannot duplicate flight-line problems and often times must test LRUs in another aircraft. One exception was noted. TISEO maintenance is performed satisfactorily without the use of a hot mock-up.

TREND Evaluation: Organizational Level AGE

Weapon System	Avionics Subsystem	Analysis Summary: Positive	Analysis Summary: Questionable	Analysis Summary: Negative	Overall Assessment	Trend Analysis
F-15	AN/APG-63 Radar	• No special flight-line test sets required • Antenna hoist is an aid to removal/installation	• Antenna handling cradle (man-handling preferred but handling damage not reported as for AN/APQ-130 antenna) • Intermediate shop test station effectiveness • Transmitter coding oil servicing equipment in intermediate shop is time consuming to utilize	• Receiver/transmitter handling equipment required • Lack of hot mock-up for intermediate level shop • Inconsistency of test tolerances/philosophy between BIT, intermediate and depot tests	Netative	6) Servicing equipment for oil cooled transmitters is considered to require excessive time to accomplish its function. Servicing the AN/APG-63 transmitter requires much less time (approximately 45 minutes) than servicing the AN/APQ-130 transmitter (7-8 hours) but further reduction of servicing times is required to minimize maintenance delays.
	AN/ANG-20 Armament Control		• Flightline test sets required to check weapons stations (and fault-isolate armament system) • Intermediate shop test station effectiveness	• Inconsistency of test tolerances/philosophy between BIT, intermediate and depot testing	Negative	

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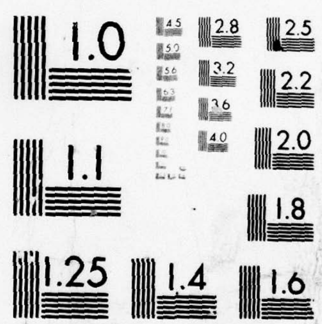

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TREND Evaluation: Organizational Level AGE

Weapon System	Avionics Subsystem	Analysis Summary			Overall Assessment	Trend Analysis
		Positive	Questionable	Negative		
F-16	AN/ARC-164 Radio	• No special flight-line test sets required • Common radio test equipment utilized when required • Interconnection test set (hot mock-up) for LRU test in intermediate and depot shops • SRU test sets in depot shop		• SRU test sets in depot shop over-designed	Positive	
	AN/ARN-118 TACAN Set	• No special flight-line test sets required • Common radio navigation test sets and instruments used on flightline if required • Interconnection test set (hot mock-up) used in intermediate shops			Positive	

TREND EVALUATION: PREVENTIVE MAINTENANCE

Weapon System	Avionics Subsystem	Analysis Summary: Positive	Analysis Summary: Questionable	Analysis Summary: Negative	Overall Assessment	Trend Analysis
	MARK V TACAN Set	• None per -6 manual • Maintenance personnel do not feel preventive maintenance is required	• MARK V TACAN, with analog design of late 60s, might operate more efficiently if tested/aligned by intermediate shop periodically		Questionable	4) Need for scheduled preventive maintenance is a function of the system design. No preventive maintenance is required or considered necessary for digital electronics. No preventive maintenance is required although there is some sentiment for preventive maintenance of analog type electronics systems. Electro-mechanical equipment presents the most obvious requirements for scheduled preventive maintenance, however, the details of such requirements (frequency, level of tear-down, etc.) are very controversial. Maintenance personnel would, in general, tend toward support of minimizing these requirements.
F-111D	KB-18A Strike Camera System	• 125 hour preventive maintenance does not appear essential to maintaining reliable operation		• Intermediate shop clean, lubricate, test, repair as required per -6 manual every 125 flying hours	Negative	
	AN/APQ-130 Radar	• None per -6 manual • None required per maintenance personnel			Positive	
F-15	AN/APG-63	• None per -6 manual • None required per maintenance personnel			Positive	
	AN/AWG-20 Armament Control	• None per -6 manual • None required per maintenance personnel			Positive	

TREND EVALUATION: PREVENTIVE MAINTENANCE

Weapon System	Avionics Subsystem	Analysis Summary: Positive	Analysis Summary: Questionable	Analysis Summary: Negative	Overall Assessment	Trend Analysis
F-4E	KS-97A Radar Scope Camera System	• 600 hour preventive maintenance does not seem essential to maintaining reliable operation	• Intermediate shop clean, lubricate, test, repair as required every 600 flying hours per -6 manual		Questionable	1) Preventive maintenance of avionics systems is being reduced in scope or eliminated entirely. Of the avionics equipment surveyed, only camera systems received scheduled preventive maintenance. 2) Maintenance personnel, in general, prefer that preventive maintenance not be required. However, some maintenance shops perform scheduled inspection/alignments of their equipment (TISEO is an example). Shops voluntarily performing preventive maintenance maintain that system performance is improved as reflected by reduced squak rates. 3) A greater need for scheduled preventive maintenance is perceived by intermediate level maintenance personnel than organizational level personnel. In many cases LRUs pulled from aircraft for in flight write-ups require only alignments. Some shop personnel, therefore, conclude that scheduled LRU alignments might minimize such problems.
	AN/ASX-1 TISEO	• None per -6 manual • Maintenance personnel consider none required • No aircraft removals unless required	• Scheduled inspection every 90 days seems to reduce system in flight write-ups	• LRUs, prior to issue for aircraft installation, are checked/aligned by the intermediate shop	Questionable	
C-5A	AN/ARC-109 Radio Set	• None per -6 manual • Maintenance personnel do not feel preventive maintenance is necessary	• AN/ARC-109 radio, with analog design of late 60s, might operate more efficiently if periodically tested/aligned by intermediate shop periodically		Questionable	

TREND EVALUATION: PREVENTIVE MAINTENANCE

Weapon System	Avionics Subsystem	Analysis Summary			Overall Assessment	Trend Analysis
		Positive	Questionable	Negative		
F-16	AN/ARC-164 Radio	• None per -6 manual • None required per flightline maintenance personnel	• Intermediate level personnel feel preventive maintenance might reduce in-flight write-ups		Questionable	
	AN/ARN-118 TACAN Set	• None per -6 manual • None required per maintenance personnel	• Analog functions with alignments might require periodic alignment		Questionable	

TREND EVALUATION: TECHNICAL MANUALS

Weapon System	Avionics Subsystem	Analysis Summary			Overall Assessment	Trend Analysis
		Positive	Questionable	Negative		
F-4E	KB-97A Radar Scope Camera System	• Considered adequate by maintenance personnel			Positive	1) The quality of technical manuals, in general, appears to be good. The manuals for support of the systems surveyed were all considered adequate for their intended purposes. 2) The technical manual problem most frequently encountered was the lack of important technical information which would be an *aid to maintenance*. 3) The second most frequently mentioned problem with manuals was overly complex, confusing or erroneous maintenance procedures, tolerances, etc. The use of supplements, rather than change pages, was a major factor contributing to this problem.
F-4E	AN/ASX-1 TISEO	• Considered adequate by maintenance personnel			Positive	
C-5A	AN/ARC-109 Radio Set	• Considered adequate by maintenance personnel			Positive	
C-5A	MARK V TACAN Set	• Organizational and depot level manuals considered adequate by maintenance personnel		• Intermediate level manual test procedures contains errors and is confusing (excessive number of supplements)	Questionable	
	KB-18A Strike Camera System	• Considered adequate by maintenance personnel			Positive	

TREND EVALUATION: TECHNICAL MANUALS

Weapon System	Avionics Subsystem	Analysis Summary: Positive	Analysis Summary: Questionable	Analysis Summary: Negative	Overall Assessment	Trend Analysis
F-111D	AN/APQ-130 Radar	• Considered adequate (except for problems noted at right) by maintenance personnel		• Insufficient technical data describing signal flow, test point values, etc.	Questionable	
F-15	AN/APG-63 Radar	• Considered adequate (except for problems noted at right) by maintenance personnel		• Flightline manuals provide insufficient data on BIT • Intermediate level manuals do not provide adequate technical data (no detailed LRU schematics, functionals lack sufficient detail, etc.) • Modifications/software changes not documented in timely fashion	Questionable	
	AN/AWG-20 Armament Control	• Considered adequate (except for problems noted at right) by maintenance personnel		• Logic tress for fault-isolation of system and LRUs are difficult to understand	Positive	

TREND EVALUATION: TECHNICAL MANUALS

Weapon System	Avionics Subsystem	Analysis Summary			Overall Assessment	Trend Analysis
		Positive	Questionable	Negative		
F-16	AN/ARC-164 Radio	• Considered adequate (exceptions noted at right) by maintenance personnel	• Intermediate level manuals do not clearly define level of repair authorized (SRU replacement versus circuit card replacement)	• Depot level manuals lack sufficient technical data for repair of some repairables	Positive	
	AN/ARN-118 TACAN Set	• Considered adequate (exceptions noted at right) by maintenance personnel	• Very limited technical data presented in intermediate level manual (not a major problem due to maintenance concept-repair by Collins)	• Depot level manual not available for evaluation	Questionable	

TREND EVALUATION: TRAINING AND PERSONNEL SKILL LEVELS

Weapon System	Avionics Subsystem	Analysis Summary: Positive	Analysis Summary: Questionable	Analysis Summary: Negative	Overall Assessment	Trend Analysis
F-4E	KS-97A Radar Scope Camera System	• Flightline maintenance can be accomplished by 3-levels • Intermediate level repair (electro-mechanical and optics) can be accomplished by 5-level personnel • 5-level skilled personnel available in intermediate level shop	• Repair by electronic component replacement authorized for intermediate level shop (requires 7-level skills)		• Questionable	1) Organizational (flightline) and intermediate maintenance shops accomplish maintenance with 5-level skilled personnel. 3-level personnel assigned to the shops are considered to be in training status and are a liability rather than a maintenance asset. 7-level personnel were normally found to be in supervisory positions.
	AN/ASX-1 TISEO	• Flightline maintenance can be accomplished by 5-levels • Intermediate level maintenance (limited to SRU replacement) can be accomplished by 5-levels • 5-level skilled personnel are assigned to flightline and intermediate level shops • Intermediate shop personnel assist with inspections on the aircraft			• Positive	2) The majority of personnel assigned to flightline and intermediate shops are 5-level skilled. However, 3-levels outnumber 7-levels and the resulting average skill level available in a field shop might be less than 5-level. 3) Many flightline and intermediate maintenance shop personnel, although having a 5-level skill rating, are not as proficient as the skill ratings would indicate due to the lack of on-the-job training. Approximately one year of OJT is considered necessary to achieve maintenance proficiency on a complex system.

TRAINING AND PERSONNEL SKILL LEVELS (page 2 of 5)

Weapon System	Avionics Subsystem	Analysis Summary: Positive	Analysis Summary: Questionable	Analysis Summary: Negative	Overall Assessment	Trend Analysis
C-5A	AN/ARC-109 Radio Set	• Flightline maintenance can be accomplished by 3-levels • Intermediate level shop maintenance (SRU replacement) can be accomplished by 5-levels • 5-level skilled personnel are assigned	• Repair by component replacement (presently authorized at intermediate level) requires 7-level skills		• Questionable	4) Field maintenance shops are normally found to be undermanned. Adequate numbers of personnel are assigned and their skill level ratings will average 5-level, however, on-the-job training will be lacking. High turnover rates (approximately 40% was reported in several shops) preclude the build-up of a cadre of highly experienced personnel.
	MARK V Tacan Set	• Flightline maintenance can be accomplished by 3-levels • Intermediate level maintenance (SRU replacement) can be accomplished by 5-levels • 5-level skilled personnel are assigned			• Positive	5) Training provided technicians at the AF technical schools was reported to be excessively limited in scope. Flightline maintenance technicians reported that their training had not related to a specific aircraft. Intermediate shop personnel reported that their system-level training was slighted in favor of detailed LRU and circuit training.
	KB-18A Strike Camera System	• Flightline maintenance can be accomplished by 5-levels • Intermediate level shop maintenance (electro-mechanical and optical) can be accomplished by 5-levels	• Repair by component replacement (presently authorized at intermediate level) requires 7-level skills		• Questionable	6) LRU testing and SRU replacements can be easily accomplished by the 5-level skilled personnel normally available in the intermediate shops. Electronic component fault-isolation and replacement requires electronic (continued next page)

TRAINING AND PERSONNEL SKILL LEVELS (page 3 of 5)

Weapon System	Avionics Subsystem	Analysis Summary			Overall Assessment	Trend Analysis
		Positive	Questionable	Negative		
		• 5-level skills are assigned to the intermediate shop which also performs flightline maintenance				repair skills (5 to 7-level) that are not consistently available in all intermediate shops. 7) The depot level maintenance shops were found to be employing civilian technicians. Due to their extensive electronics repair experience, training provided, low turn-over rate, etc., these technicians would be considered to have 7-level electronic repair skills
	AN/APQ-130 Radar		• Flightline maintenance requires 5 to 7-level skills • Intermediate shop maintenance requires 5 to 7-level skills • Average skills available in the flightline and intermediate shops equals 5-level	• Extensive on-the-job training as required before maintenance proficiency is developed	• Questionable	
F-15	AN/APG-63 Radar		• Flightline maintenance requires 5 to 7-level skills • Intermediate shop maintenance requires 5 to 7-level experience • Skills available in flightline and intermediate level shops equal 5-level	• Extensive on-the-job training is required before maintenance proficiency is developed	• Questionable	

TRAINING AND PERSONNEL SKILL LEVELS (page 4 of 5)

Weapon System	Avionics Subsystem	Analysis Summary: Positive	Analysis Summary: Questionable	Analysis Summary: Negative	Overall Assessment	Trend Analysis
F-16	AN/AWG-20 Armament Control	• Flightline maintenance can be accomplished by 5-level skilled personnel • Flightline maintenance personnel have 5-level skills	• Intermediate shop maintenance requires 5 to 7-level skilled personnel • Intermediate shop skill level averages 5-level		• Questionable	
	AN/ARC-164 Radio	• Flightline maintenance can be accomplished by 3-levels • Intermediate level maintenance (limited to SRU replacement) can be accomplished by 5-levels • 5-level skilled personnel are available in the flightline and intermediate shops			• Positive	
	AN/ARN-118 Tacan Set	• Flightline maintenance can be accomplished by 3-levels • Intermediate level maintenance (limited to functional tests) can be accomplished by 3 levels (continued next page)				

TRAINING AND PERSONNEL SKILL LEVELS (page 5 of 5)

Weapon System	Avionics Subsystem	Analysis Summary			Overall Assessment	Trend Analysis
		Positive	Questionable	Negative		
		• 5-level skilled personnel are assigned to the intermediate shop which also performs flightline maintenance				

TREND EVALUATION: TROUBLESHOOTING METHODS

Weapon System	Avionics Subsystem	Analysis Summary: Positive	Analysis Summary: Questionable	Analysis Summary: Negative	Overall Assessment	Trend Analysis
F-4E	KS-97A Radar Scope Camera System	• System pulled from aircraft for shop check	• Shop uses manual procedures, circuit analysis, component substitution	• No plug-in SRUs to aid fault-isolation	Positive	1) Substitution is the most popular system troubleshooting technique used on the flightline
	AN/ASX-1 TISEO	• BIT is performed • BIT failure is analyzed • SRUs substitution in conjunction with manual procedures used in shop for LRU fault-isolation	• Interface test set is used on the flightline as a last resort • One LRU at a time is pulled for shop check	• BIT failure analysis requires test set • Poor accessibility for connection of interface test set to system	Questionable	2) The second most popular system troubleshooting technique used by flightline personnel is to pull suspected LRUs from the aircraft for testing in the intermediate level shop. This technique is resorted to for those situations where spare units are not available for substitution in the aircraft.
C-5A	AN/ARC-109 Radio Set	• System check using BIT meter • Substitution in aircraft using redundant LRU • SRU substitution in conjunction with manual procedures in shop			Positive	3) System BIT capability is considered to be a definite aid for system troubleshooting. A BIT capability intended for operational/functional checks allows a quick system check, which in conjunction substitution, is effective for fault-isolation. Automatic BIT diagnostics has not proven to be an effective aid for troubleshooting because of low confidence levels associated with fault-indications.

TROUBLESHOOTING METHODS (page 2 of 5)

Weapon System	Avionics Subsystem	Analysis Summary: Positive	Analysis Summary: Questionable	Analysis Summary: Negative	Overall Assessment	Trend Analysis
F-111D	MARK V Tacan Set	• System is first checked using BIT • LRU substitution using redundant aircraft LRUs • SRU substitution in conjunction with manual procedures used in shop for LRU fault-isolation	• Procedures in intermediate manual are complex and difficult to use by other than skilled technicians	• Control unit has no plug-in SRUs for substitution • Control unit troubleshoot at depot using manual procedures, circuit analysis, etc.	Positive	4) Shop-replaceable-units (plug-in modules), when provided in LRUs, are effective aids for troubleshooting. Fault-isolation by substitution of SRUs is a preferred shop technique which allows fault-isolation by lower skilled personnel. When SRUs are not included in the LRU design, technicians must accomplish fault-isolation by circuit analysis, deductive logic, and component replacement. 5) Automatic fault-diagnostics on intermediate and depot level test stations has not proven to be an effective aid for troubleshooting LRUs. As with system-level automatic diagnostics, the low confidence levels associated with LRU automatic fault diagnostics have caused technicians to rely heavily on functional tests and substitution techniques.
	KB-18A Strike Camera System	• System check utilizing BIT • LRU substitution utilized 50% of the time • LRUs pulled for shop check • SRUs substitution in conjunction with manual procedures, used in shop for LRU fault-isolation	• Shop uses manual procedures, circuit analysis, etc. to troubleshoot camera unit	• No plug-in SRUs in camera unit	Positive	
	AN/APQ-130 Radar	• System check using BIT first • BIT fault-diagnostics secondary	• Suspected LRUs pulled for shop check if no units available for substitution (low confidence diagnostics)	• BIT fault-diagnostics is ineffective in identifying defective LRU	Questionable	

TROUBLESHOOTING METHODS (page 3 of 5)

Weapon System	Avionics Subsystem	Analysis Summary			Overall Assessment	Trend Analysis
		Positive	Questionable	Negative		
		• LRU substitution in aircraft when spares are available • SRU substitution in conjunction with analysis, manual procedures, etc. utilized in shop for LRU fault-isolation		• Significant amount of logical analysis is required to supplement automatic diagnostics on intermediate test stations • Hot mock-up required to resolve problems of inconsistent test results in intermediate shop		
F-15	AN/APG-63 Radar	• System check using BIT first • BIT fault-diagnostics secondly • LRU substitution in aircraft if spares are available • Suspected LRUs pulled for shop check (70-80% confidence level using BIT diagnostics) • SRU substitution in conjunction with analysis, diagnostics, etc. utilized in shops for LRU fault-isolation	• BIT fault-diagnostics provides 70-80% confidence level	• Hot mock-up required to resolve problems of inconsistent test results in intermediate shop • Automatic fault-diagnostics for ATE in the intermediate level is not fully operational		

TROUBLESHOOTING METHODS (page 4 of 5)

Weapon System	Avionics Subsystem	Analysis Summary: Positive	Analysis Summary: Questionable	Analysis Summary: Negative	Overall Assessment	Trend Analysis
	AN/AWG-20 Armament Control	• System checked using BIT • Substitution of LRUs attempted in spare is available • LRU pulled for shop check if no spare is available • SRU substitution in conjunction with automatic diagnostics, analysis, etc. used in shop for LRU fault-isolation	• Test equipment (AWM-72) is required in conjunction with BIT to fault-isolate to an LRU	• AWM-72 utilization requires excessive amount of time • Armament control panel malfunctions difficult to troubleshoot • Majority of Computer-Programmer unit problems beyond capability of intermediate level shop fault-isolation/repair capability • Automatic fault-diagnostics for ATE in the intermediate shop is not fully operational	Questionable	
F-16	AN/ARC-164	• LRU substitution following system operational check • SRU substitution in conjunction with manual diagnostics, analysis, etc. in the intermediate shop for LRU fault-isolation			Positive	

TROUBLESHOOTING METHODS (page 5 of 5)

Weapon System	Avionics Subsystem	Analysis Summary			Overall Assessment	Trend Analysis
		Positive	Questionable	Negative		
	AN/ARN-118 Tacan Set	• BIT is performed initially • LRU substitution is attempted if spare LRUs are available • Suspected LRU or complete system is pulled for shop check if no spares are available for substitution • Collins accomplishes all LRU troubleshooting and repair		Positive		

SECTION VI

MAINTENANCE ITEM AREA TRENDS

TREND SUMMARY: ACCESSIBILITY

Locations	Mounting Concepts	Access Methods	Accessment	Advantages	Disadvantages
Cockpit	Console/instrument panel	Thru cockpit	Satisfactory	• Direct access • Minimum access time (excluding delays caused by other shops) • Second lowest LRU remove/install time	• Labor intensive area • Single-man/single-shop area (in fighters) • Poor working position • Delays caused by other shops
Electronics Compartment	Hard-mounted/single LRU rack	Access panel	Least preferred		• Excessive number of torqued fasteners on panels • Some dependency on other shops for support (opening panels, removing equipment, operating support equipment, etc.) • Limited working area • Highest LRU remove/install time
Electronics Bay	Multi-LRU rack	Access door	Preferred	• Quick-release door latches • Stand-up working position • Quick-release LRU fasteners • Fewest delays caused by other shops • Lowest LRU remove/install time • Large unobstructed work area	

TREND SUMMARY: ACCESSIBILITY (continued)

Locations	Mounting Concepts	Access Methods	Accessment	Advantages	Disadvantages
Radome	Hard-mounted/ slide-out rack	Swing-away radome	Satisfactory	• Large work area • Stand-up working position • Few maintenance delays caused by other shops	• Excessive height on some aircraft • Fragile/harzardous equipment exposed in work area • Indirect access to radome fasteners on some aircraft • Lack of quick release fasteners

TREND SUMMARY: AGE OF SYSTEM AND TECHNOLOGY

Factors	Variations	Overall Accessment	Advantages	Disadvantages
Solid-state components	Discrete	Satisfactory	• Improving reliability • Reducing size, weight • Reducing cooling requirements • Reducing cost per function	• Increasing provisioning problems • Increasing requirements for special techniques (installation/removal, test, etc.)
	Small-scale integration	Improvement		
	Medium-scale integration (micro-electronics)	Preferred		
Signal Processing Technique	Analog		• Lower complexity	• Initial and periodic alignments • Evaluation of performance
	Digital		• *Lack of* alignments • Simplified evaluation of performance	• Higher complexity
	Hardwired logic	Satisfactory	• Less complex than digital	• Modifications
	Programmable (using software) logic	Preferred	• Simplified changes	• Software configuration management • Complexity
Electronics Cooling	Liquid cooling	Least perferred	• None (from maintenance viewpoint)	• System complexity • Maintenance required • Integration level is highest
	Forced air cooling	Satisfactory	• Reduced complexity (versus liquid) • Reduced maintenance (versus liquid)	• Integration (design, operaation and maintenance)
	Ambient, non-forced air cooling	Preferred	• Reduced noise • Less support equipment • Reduced integration	

TREND SUMMARY: AGE OF SYSTEM AND TECHNOLOGY (continued)

Factors	Variations	Overall Accessment	Advantages	Disadvantages
Switches	Rotary	Unsatisfactory		• Lost, loose knobs (or tools) in cockpit • High density/complexity of wiring • Higher failure rate than electronic components
	Thumbwheel (variation on rotary)	Satisfactory	• Eliminates loose knobs and tools in cockpit	
	Pushbutton, toggle, etc.	Preferred	• Eliminates loose knobs/ tools in cockpit • Eliminates dense/complex wiring in LRU	
Tuners	Electro-mechanical servos	Unsatisfactory	• lower complexity	• Low reliability • Rotary switch problems
	Electronic	Preferred	• High reliability • Eliminates rotary switches	
LRU Interconnections	Discrete-wire bundles and quick-release connectors	Satisfactory	• Positive connector action • Repairability	• Pin replacement problems
	Terminal-to-terminal inter-rack wiring and rack connectors	Unsatisfactory		• Rack connector problems (seating of LRUs, etc.) • Added complexity (more connectors)
SRA Interconnections	Pin-to-pin wiring (soldered connections)	Satisfactory	• Simple repair • No provisioning problems	
	Wire-wrap assemblies	Satisfactory		• Difficulty of repair

TREND SUMMARY: DEBRIEFING

Factors	Variations	Overall Accessment	Advantages	Disadvantages
Malfunction Symptom Complexity	• Simple	Positive	• Easily described by aircrew • Easily entered in forms by aircrew and debriefers • Easily understood by maintenance • Malfunctioning system (and responsible shop) is obvious to debriefers • More accurate coding of write-ups	
	• Complex (integrated with other sub-systems, unique or special modes, extensive BIT, etc.)	Negative		• Difficulty of communications • Technical advice required in debriefing • Maintenance experience required in debriefing • Malfunctioning subsystem is not obvious
Status (operational or non-operational)	• Known (determined by aircrew)	Positive	• Problems associated with delayed write-ups are avoided	
	• Unknown (example: camera status is unknown until film assessment is accomplished	Negative		• Delayed write-ups and associated problems: 1. Failure to enter write-up in forms (both aircraft and debriefing) 2. Failure to notify maintenance control of problem 3. Failure to notify responsible shop of problem

TREND SUMMARY: DEPOT SUPPORT

Factors	Variations	Overall Accessment	Advantages	Disadvantages
Depot Level Repair	• Only SRAs beyond I-level capability	Satisfactory	• Heavy demand is placed on the assets normally available in an I-level shop resulting in ineffective maintenance	• I-level shops can not provide adequately skilled personnel to accomplish repairs of highly complex electronics
	• Most SRUs and some LRUs	Satisfactory	• I-level shops can normally be expected to be able to provide the assets required to accomplish LRU repair	• I-Level shop must be extensively equipped in terms of skills, equipment, spare parts, etc.
	• All LRUs and SRUs	Preferred	• I-level shop requires only limited skills, manpower and equipment (to provide fault verification capability). Emphasis can be shifted to maintaining aircraft rather than repair of repairables • Potential for higher quality LRU maintenance with lower life cycle costs	• Total dependence of operational units on supply system
Test Capability at Depot	• Same as I-level (implies same equipment)	Satisfactory	• Investment in equipment related costs can be minimized • Continuity of test tolerances, procedures, etc. is assured	• Items repaired at depot will be rejected at I-level frequently
	• Same as I-level plus more extensive capability	Preferred	• I-level malfunction can be duplicated at depot • Test-tolerance traceability • Improved fault-isolation capability	• Equipment associated investment is highest
	• Extended test capability only	Satisfactory		• Limited test tolerance traceability • No duplication of I-level malfunction

TREND SUMMARY: PRE-, IN-, POST-FLIGHT INSPECTIONS

Factors	Variations	Overall Accessment	Advantages	Disadvantages
Maintenance Inspection Requirements	Required	Unsatisfactory		• Requires commitment of limited avionics maintenance resources which could be better utilized elsewhere • Increases ground operating time on systems and support equipment
	Not required	Preferred	• Frees maintenance resources for more important uses • Reduces system ground operating times	
Operational Checks (by aircrew)	Without BIT	Unsatisfactory		• Qualitative checks only • Heavy aircrew workload (operating switches, observing displays, etc.) • Many unchecked functions, modes, etc.
	Including Initiateable BIT	Satisfactory	• Test throughness is better than without BIT • Quantitative checks are provided • Additional failure data can be provided maintenance by aircrew	• Normally not appropriate for use in flight • Operation at the discretion of the aircrew • Aircrew workload might be increased

TREND SUMMARY: PRE-, IN-, POST-FLIGHT INSPECTIONS (Continued)

Factors	Variations	Overall Accessment	Advantages	Disadvantages
Operational Checks (by aircrew) (Continued)	Including Automatic BIT (nonconstant)	Satisfactory	• Minimum impact on aircrew workload • Appropriate for in-flight use • Quantitative checks, improved test throughness, and additional failure data for maintenance	• Flight phase of failure cannot be identified for maintenance
	Including Automatic BIT (constant fault-monitoring)	Preferred	• Minimum impact on aircrew workload • Operates in-flight • Provides quantitative checks, improved throughness, and additional failure data for maintenance • Failures can be identified by flight phase (additional maintenance data)	

TREND SUMMARY: LEVEL OF BASE REPAIR

Factors	Variations	Overall Accessment	Advantages	Disadvantages
Authorized Base Repair	LRU fault-verification and replacement (no repair authorized)	Satisfactory	• Higher quality LRU maintenance is possible at the depot (due to higher average skill level, more specialization, etc.). Higher quality maintenance can improve LRU reliability at the system-level. • Reduced manpower requirements at the intermediate level where problems of insufficient manpower, high turnover, etc. are a major problem.	• Very great dependency on depot and supply system to sustain unit operations. • Some maintenance personnel assigned to intermediate level feel they are being deprived of the right to perform maintenance within their capabilities. • Equipment at intermediate level tends to be under-utilized.
	LRU repair by SRU replacement	Satisfactory	• Moderate demands on supply system and depot to support unit operations. • Intermediate level workload is such that most personnel will not complain about under-utilization of their skills. • Test equipment at intermediate can be more efficiently utilized since similar equipment is required to provide either fault-verification test only or fault-verification plus SRU replacement.	• Complexity of some LRUs being repaired at intermediate level is such that skill level requirements, test equipment requirements, etc. are excessive.
	LRU/SRU repair by electronic component replacement	Satisfactory	• Results in least dependency on supply system and depot	• Manpower, skills, equipment, etc. required at intermediate level are excessive. Even when this repair is authorized, depot still receives large number of units not repaired in field shops.

TREND SUMMARY: LEVEL OF BASE REPAIR

Factors	Variations	Overall Accessment	Advantages	Disadvantages
System-Level Alignments	Very few (or none) required	Preferred	• Minimizes on-the-aircraft maintenance time thereby improving aircraft availability. • Minimizes flightline test equipment requirements • Minimizes system ground operating time. • Minimizes system periodic inspection requirements • Improves probability that malfunctions can be identified by quantitative rather than qualitative means.	
	Several	Satisfactory		• On-the-aircraft maintenance time will be significant. • Flightline equipment and manpower requirements will be considerable. • Periodic inspections might be required. • Identification of defective LRUs will be more difficult or at the least, delayed (alignments must be attempted prior to replacing LRU).
Scheduled Maintenance	None required	Preferred	• Minimizes system ground operating time. • Scarce maintenance resources are freed for other uses.	
	Required	Satisfactory	• System performance might be enhanced in some cases.	• System ground operating time can be excessive. • Scarce maintenance resources are tied down.

TREND SUMMARY: MAINTAINABILITY CHARACTERISTICS OF EQUIPMENT DESIGN

Factors	Variations	Overall Accessment	Advantages	Disadvantages
System Packaging	One to three LRUs	Preferred	• Simplifies system repair by minimizing complexity of fault-isolation task	• Reducing the number of LRUs increases their complexity which makes LRU repair more difficult
	Four or more LRUs	Satisfactory	• Reduced LRU complexity contributes to less difficult unit repair in the intermediate/depot shop	• System repair is more difficult as a result of increased fault-isolation difficulty
	Racked LRUs (with inter-rack wiring and plug-in LRUs)	Unsatisfactory	• Minimized remove/install time • Less likelihood of damaging rack wiring than interconnection cables when removing/installing LRUs	• LRU/rack connector interface problems • Added complexity for troubleshooting • Rack fault-isolation by substitution • Rack removal/installation is difficult
	Racked LRUs (with LRU interconnection cables)	Preferred	• No LRU seating problems • Rack maintenance limited to mechanical repairs • Rack removal/installation is simplified • Interconnection cables can be replaced/repaired without rack removal	• LRU removal/installation creates more stresses on electrical cables than rack wiring, and increases probability of wire breakage
System-level Alignments	Required	Unsatisfactory		• Requires flightline test equipment or BIT equipment • Increases system ground operating time • Probability of misalignment • Increased justification for scheduled maintenance

TREND SUMMARY: MAINTAINABILITY CHARACTERISTICS OF EQUIPMENT DESIGN

Factors	Variations	Overall Accessment	Advantages	Disadvantages
System-level Alignments (Cont)	Not required	Preferred	• Eliminates flightline equipment requirements • Contributes to reduced ground operating time • Probability of misalignment is eliminated • Reduced requirements for scheduled maintenance • Malfunction (versus misalignment) recognition time is minimized	
Redundant Systems/Functions	Provided (example: C-5A COMM/NAV equipment)	Preferred	• Output/performance cross-checking provides positive indication of malfunction • Interchanging of LRUs/SRUs allows rapid fault-isolation • Reduced emphasis on repair of malfunctions discovered during preflight checks	• Fault-isolation by substitution is practical exclusively
	Not provided	Satisfactory		• Malfunctions are less obvious and fault-isolation is more difficult • Mission essential equipment found defective during preflight must be fixed to avoid ground abort

TREND SUMMARY: MAINTAINABILITY CHARACTERISTICS OF EQUIPMENT DESIGN

Factors	Variations	Overall Accessment	Advantages	Disadvantages
BIT Capability	Not Provided	Unsatisfactory	• Reduced system complexity • Higher quality tests using external test equipment • Similar aircrew operational checks and maintenance ground checks improves communications	• Test equipment requirements are greater • Qualitative checks are used almost exclusively • Excessively complex/time consuming system checks
	Operational Status Checks (go/no-go test)	Satisfactory	• Test equipment requirements minimized/eliminated • Minimized complexity/time for system checks • Quanitative checks are performed • Good aid for troubleshooting by substitution	• System complexity becomes greater • Maintenance BIT procedures can be extensive • BIT confidence levels necessitate back-up operational checks by other means
	Operational and Fault-diagnostics Checks	Satisfactory	• Potential for improved maintenance efficiency by reducing maintenance repair time on complex systimes • Reduced O-level dependence on I-level	• Complexity (system, procedures, etc.) • Less than satisfactory confidence levels • Not required for low complexity systems
	Operational Checks and Fault-indicators (Flags on LRUs)	Preferred	• Good maintenance aid in quick-fix environment • Minimized system ground operating time • Maintenance procedures are less complex than for other forms of diagnostics	• Increased LRU complexity

TREND SUMMARY: MAINTAINABILITY CHARACTERISTICS OF EQUIPMENT DESIGN

Factors	Variations	Overall Accessment	Advantages	Disadvantages
BIT Capability (Cont)	Operational Checks and Fault-indicators (Flags on LRUs)(Cont)	Preferred (Cont)	• Very high confidence level for isolation of BIT failure to the LRU level • Reduced BIT complexity at system level	
LRU Configuration	Plug-in SRUs not utilized	Unsatisfactory	• SRU connector problems are avoided	• Fault-isolation is difficult since substitution, an often used troubleshooting aid, is impracticable
	Plug-in SRUs	Preferred	• Simplified fault-isolation and repair of LRUs	• Fault-isolation by substitution utilized almost exclusively
	LRU Test Connector	Satisfactory	• Test connector problems avoided • Less complex test sets	• Increased dependency on substitution techniques • More complex test equipment hook-up for troubleshooting of LRU
	No LRU Test Connector	Satisfactory	• Simplied fault-isolation to SRU' level	• Test set complexity • Test connector/cable problems
	Chassis Utilized (components, interconnecting waring wiring, connectors, etc.)	Satisfactory		• Difficult to troubleshoot • Cannot be replaced as an SRU
	No Chassis (SRUs interconnected by flat ribbon cables, etc.)	Preferred	• Simplified fault-isolation by substitution of cables	

TREND SUMMARY: MAINTENANCE DATA COLLECTION, DOCUMENTATION AND FEEDBACK SYSTEM

Factors	Variations	Overall Accessment	Advantages	Disadvantages
Maintenance Data Collection/Documentation	Debriefing Forms (Comprehensive: defines utilization and status)	Preferred	• More comprehensive aircraft/system history can be generated	• Complexity of debriefing forms • Debriefing time required • Utilization data is not essential to effective maintenance
	Debriefing Forms (Non-comprehensive: defines status only)	Satisfactory	• Low complexity debriefing forms • Minimum debriefing time • Essential maintenance data (write-ups) are recorded	• System utilization can not be determined resulting in incomplete system history
	Inflight Malfunction Recording	Preferred	• More comprehensive utilization/status/malfunction data for use by maintenance • Potential for automated debriefing	• Difficulty of real time readout, display, and analysis • System complexity
	No Inflight Malfunction Recording	Satisfactory	• Minimum system complexity • Non-essential data is avoided	• Limited data available from aircrew • No automated debriefing possible
	Elapsed Time Indicators	Preferred	• Realiability as a function of operating time rather than flight hours, which is important data for maintenance/support planners, contractors, etc. can be collected	• Increased system complexity • Non-essential data for field/depot maintenance organizations makes collection a problem

TREND SUMMARY: MAINTENANCE DATA COLLECTION, DOCUMENTATION AND FEEDBACK SYSTEM

Factors	Variations	Overall Accessment	Advantages	Disadvantages
Maintenance Data Collection/ Documentation (Cont)	No Elapsed Time Indicators	Unsatisfactory	• Minimum system complexity • Non-essential data collection is avoided	• Contractors, maintenance/ support planners lack important reliability data
Maintenance Analysis/Reports	Automatic Data Processing	Preferred (recurring reports only)	• Periodic reports summarizing maintenance data • Trend analysis (problem systems, LRUs, etc.) is accomplished	• Real time data is not available • Data and analysis does not consider unique problems • Error correction, review of reports, etc. consumes excessive manhours
	Manual Analysis of Forms/Records	Satisfactory	• Real time information • Analysis tailored to specific problems • Unneccessary periodic analysis can be avoided to minimize manhour consumption	• Not suited to satisfying recurring report requirements
	Constant Analysis of Malfunction/Maintenance Data Necessary	Unsatisfactory	• Improved maintenance efficiency • Aircraft histories (form files, log books, etc.) are maintained in responsible shops	• Aircraft history required in or near shop requiring information • Real time availability of data is essential
	Constant Analysis Not Required	Preferred	• No real time need for information • Data retrieval in shop is not essential	

TREND SUMMARY: MAINTENANCE ORGANIZATION

Factors	Variations	Overall Accessment	Advantages	Disadvantages
Maintenance Levels	2-Level (intermediate and depot)	Satisfactory	• Total manpower requirements might be less than for 3-level organization • Communications problems between organizational and intermediate maintenance are avoided • For non-integrated low complexity systems, maintenance efficiency benefits (by using same personnel to repair system and LRUs) • LRUs can be repaired on base	• Minimal supervision of personnel out of shop on flightline • Insufficient transportation for shop personnel • Insufficient aircraft systems training/experience • Inability to support complex system in aircraft
	2-Level (organizational and depot)	Satisfactory	• Total manpower requirements might be less than for 3-level organization • Communications problems between organizational and intermediate maintenance are avoided • Maintenance efficiency benefits (by using same personnel (to fix system and test LRUs)	• Lack of in-depth expertise (no LRU maintenance training/experience) on base • Flightline orientated personnel required to operate/maintain some shop equipment (hot-mockups as a minimum) to provide fault-verification capability • LRU repair cannot be accomplished on base (must be done at depot shop)

TREND SUMMARY: MAINTENANCE ORGANIZATION

Factors	Variations	Overall Accessment	Advantages	Disadvantages
Maintenance Levels (con't)	2-Level (organizational and intermediate)	Satisfactory	• Maximizes self-sufficiency of military organizations • For low complexity LRUs which can be repaired by 5-level skilled personnel, maximum utilization of resources available in intermediate shops is obtained	• Skill requirements (7-level) for fault-isolation/repair of complex LRUs cannot be satisfied by the military organization due to problems of training, manning, etc. • Complex, expensive test equipment cannot be cost-effectively located at each base • Benefits of specialization, production line techniques, etc. as used at depot, cannot be realized
	3-Level (organizational, intermediate, and depot)	Satisfactory	• Benefits of technician specialization in aircraft avionics systems maintenance or LRU maintenance for support of highly complex, integrated avionics systems	• Maximum manpower requirements • Maximum communications problems • Maintenance problems due to overspecialization at organizational, intermediate levels

TREND SUMMARY: ORGANIZATIONAL LEVEL AGE

Factors	Variations	Overall Accessment	Advantages	Disadvantages
Special Handling Equipment	Required	Unsatisfactory	• Protects personnel from personal injury • Reduces probability of LRU damage during handling	• Additional training requirements • Maintenance delays • Increased dependence on powered support equipment provided by other shops • Maintenance personnel prefer man-handling
	Not Required	Preferred	• Minimizes training requirements • Minimizes maintenance delays	• Weight of LRUs must be limited • Some handling damage
Flightline Test Equipment	Required	Satisfactory	• Reduced system complexity (assuming no BIT required) • Potential for improved test throughness, confidence, etc. as compared to operational tests and BIT	• Maintenance delays (finding transporting, hook-up, checkout of equipment) • Test access • Non-availability for system operational checks by aircrews
	Not Required (BIT/operational checks only)	Preferred	• Minimized maintenance delays • Minimized test access problems • Maintenance/aircrews can perform similar BIT/operational checks	• Potential for reduced confidence test throughness
Hot Mock-up	Not Utilized (Non-integrated LRU test sets employed exclusively)		• Less test equipment is required (as compared to hot mock-up plus LRU test sets situation)	• Problems of test tolerance/philosophy continuity between system BIT and LRU test sets

TREND SUMMARY: ORGANIZATIONAL LEVEL AGE

Factors	Variations	Overall Accessment	Advantages	Disadvantages
Hot Mock-up (Cont.)				• In ability to duplicate system malfunctions in shop • Training problem: shop personnel develops no experience at the system level
	Utilized (in place of LRU test sets)		• Minimized test equipment requirements • Minimized test tolerance/ philosophy continuity problems • Shop can duplicate flight-line problems which aids maintenance • Shop personnel develop system-level experience and can be used on flight-line if required	• Test throughness question-able • Test access problems • Fault-isolation efficiency
	Utilized (in addition to LRU test sets)		• Minimized LRU test through-ness, fault-isolation efficiency, etc. (by use of LRU test sets) • Minimized test tolerance/ philosophy differences between flightline and shop tests (by use of hot mock-up)	• Excessive test equipment requirements

TREND SUMMARY: PREVENTIVE MAINTENANCE

Factors	Variations	Overall Assessment	Advantages	Disadvantages
Signal Processing Techniques	Analog	Satisfactory		• Periodic alignment to correct for ageing components might be required
	Digital	Preferred	• Alignments are eliminated and any possible requirements for preventive maintenance are avoided	
Periodic Inspection (repair/align as required)	Required	Unsatisfactory	• Operating performance of system might be improved • Maintenance management (especially, the chief-of-maintenance) considers periodic inspections essential to assure operations that maximum maintenance support is being provided to improve/maintain aircraft availability	• Excessive system ground operating time and induced failures • Maintenance assets (hangar space, manpower, test equipment, etc.) required for supporting inspections, might be more productive if utilized elsewhere • Aircraft in inspection status are not available for use by operations
	Not Required	Preferred	• System ground operating time and induced failures minimized • Maintenance assets can be devoted to corrective maintenance • Aircraft downtime for inspections is minimized	• Systems might operate with degraded performance for extensive time periods before out-of-tolerance conditions are detected by aircrew using operational checks

TREND SUMMARY: TECHNICAL MANUALS

Factors	Variations	Overall Assessment	Advantages	Disadvantages
Information Provided	Functional Level	Satisfactory	• Simplified manuals preferred by less experienced technicians • Less voluminous manuals possible for flightline use	• Highly skilled technicians (who deal with more complex malfunctions) are provided insufficient data
	Detailed	Preferred	• Extensive data is provided to allow skilled technicians to accomplish repairs	• Less experienced technicians are overwhelmed by the extensive/complex data provided. • Voluminous manuals are required
Changes	Supplements	Unsatisfactory	• Available in a timely fashion normally	• Extremely confusing when extensive supplements are required
	Change Pages	Preferred	• Confusion associated with procedural changes are minimized	• Change pages for manuals are not available in the field concurrently with hardware changes but lag considerably

TRENDS SUMMARY: TRAINING AND PERSONNEL SKILL LEVELS

Factors	Variations	Overall Assessment	Advantages	Disadvantages
System Complexity	Low (less than 4 LRUs)	Preferred	• Flightline personnel having 5-level skill rating and some on-the-job training can perform flightline maintenance satisfactorily	
	High (4 or more LRUs)	Satisfactory		• Flightline personnel require extensive on-the-job training and 5 to 7-level skill rating before becoming proficient
Level of Base Repair Authorized	LRU fault verification only (LRU repair at depot)	Satisfactory	• Intermediate shop personnel having 3 to 5-level skills and some on-the-job training can test LRUs	• 5-level skills available in the intermediate shop are not utilized to their fullest
	LRU repair limited to SRU replacement (SRU repair at depot)	Preferred	• Intermediate shop personnel having 5-level skills and some on-the-job training can successfully accomplish required maintenance • 5-level skills normally found in intermediate shops will be fully utilized	
	LRU repair (including SRU repair by component replacement)	Satisfactory		• Intermediate shop personnel require extensive on-the-job training and 5 to 7-level skill rating before becoming proficient

TREND SUMMARY: TROUBLESHOOTING METHODS

Factors	Variations	Overall Assessment	Advantages	Disadvantages
System Built-In-Test Capability	Operational Test (no automatic diagnostics)		• Indicates presence of faults to aid fault-isolation by substitution	• For complex systems, technician must determine which LRUs to replace by analysis
	Operational Test, plus fault-diagnostics		• Indicates presence of faults to aid fault-isolation by substitution • Automatically diagnoses which LRU is at fault and informs technician	• More complex BIT procedures • Low confidence level in BIT diagnostics
	Operational Test plus fault-diagnostics and fault-indicators (flags)		• Indicates presence of faults to aid fault-isolation by substitution • Automatically diagnoses which LRU is at fault and informs technician • BIT procedures might be less complex • Fault-diagnostics is possible after sortie without turning on system	
Shop-Replaceable-Units	Not Utilized		• Minimized connector problems	• Fault-isolation by substitution is made very difficult and time consuming • Test access is not satisfactory

TREND SUMMARY: TROUBLESHOOTING METHODS (continued)

Factors	Variations	Overall Assessment	Advantages	Disadvantages
Shop-Replaceable-Units (continued)	Utilized		• Fault-isolation by substitution can be accomplished and the unit repaired using much lower skilled personnel • Good test access by the use of extender boards, etc. • SRUs can be pulled for tests on SRU testers to accomplish fault-isolation	

SECTION VII

DESIGN FEATURES AND TECHNIQUES DEFINITION

COMMUNICATION SUBSYSTEM: DESIGN FEATURES AND TECHNIQUES DEFINITION

Areas Identified as Needing Maintainability Improvement	Related Trends In State-of-the-Art Equipment	Potentially Applicable Design-For-Repair Concepts
<u>Accessibility</u>:		
o Location of antenna switching relays	o Smaller receiver/transmitter units possibly combined with control unit and located in cockpit o Switching relay included in TACAN R/T units	o <u>Physical Partitioning Optimization</u> - to consider locating antenna switching network in R/T o <u>Functional Layout Optimization</u> - to locate relays in aircraft for better accessibility
o Control of access to preset frequency programmers	o Both uncontrolled and limited access concepts are used on various equipments	o <u>Functional Layout Optimization</u> - to allow access by operations/maintenance or limit access to maintenance
o Location of overload protection fuses/circuit breakers	o Fuses are presently located on front and back of units, in equipment racks, and on panels	o <u>Functional Layout Optimization</u> - to asses fuzes versus circuit breakers and various locations on LRUs o <u>Physical Partitioning Optimization</u> - to consider panel, rack, and LRU locations for overload protection
<u>Repairability</u>:		
o Multiwafer rotary switches	o Rotary switches are still being used for many control functions o Thumbwheel switches, push button switches, etc. offer advantages	o <u>Mechanical Interface Optimization</u> - to determine advantages of replacing rotary switches with more repairable switches
o Electro-mechanical servo tuners	o Eliminated by combining R/T unit and control unit in cockpit o Eliminated by digital frequency synthesis	o <u>Integrated Electronics Applications</u> - to accomplish all tuning with solid state electronic components

COMMUNICATION SUBSYSTEM: DESIGN FEATURES AND TECHNIQUES DEFINITION (page 2 of 3)

Areas Identified as Needing Maintainability Improvement	Related Trends In State-of-the-Art Equipment	Potentially Applicable Design-For-Repair Concepts
Controls/Displays:		
o Control knob attachment	o Thumbwheel switches, push button switches, etc. preclude problems with loose hardware in cockpit o Control knobs with set screws (which invariably cause maintenance problems) are used in some applications	o Mechanical Interface Optimization - to avoid loose hardware or contain it within the LRU
Testability:		
o Operational checks are qualitative (no BIT features are provided for quanitative checks from the cockpit)	o Radio sets are normally not equipped with fault-monitoring BIT features for use by aircrews	o Continuous Fault-Monitoring - for minimizing need for scheduled maintenance inspections to check radio alignments
o Flightline test equipment is required for fault-verification and fault-isolation (applies to those systems with no BIT meter on the receiver/transmitter)	o Receiver/transmitters are normally equipped with BIT meters except when the R/T unit is located in the cockpit	o BIT Versus External Test Equipment - to consider advantages of eliminating flightline radio test equipment o Test Commonality/Optimization - to consider advantages of using BIT features as part of LRU shop testing concept
Preventive Maintenance:		
o Analog signal processing with alignments required for optimum performance	o Scheduled maintenance inspections of radio sets are not required by the -6 manual	o Continuous Fault-Monitoring - for alerting aircrews/maintenance that out-of-tolerance conditions exist o Integrate Electronics - digital signal processing techniques to eliminate alignments

COMMUNICATION SUBSYSTEM: DESIGN FEATURES AND TECHNIQUES DEFINITION (page 3 of 3)

Areas Identified as Needing Maintainability Improvement	Related Trends In State-of-the-Art Equipment	Potentially Applicable Design-For-Repair Concepts
<u>Interfaces:</u>		
o Flat cable assemblies (interconnecting SRUs, circuit boards, etc.) are easily broken during radio repair	o Receiver/transmitter unit with no chassis (SRUs attached to each other and interconnected by cable assemblies) exhibits many improved maintenance characteristics	o <u>Connecting Device Optimization</u> - to minimize susceptability to breakage while maintainaing the positive features o <u>Functional Partioning Optimization</u> - to consider advantages of chassis elimination

NAVIGATION SUBSYSTEM: DESIGN FEATURES AND TECHNIQUES DEFINITION

Areas Identified as Needing Maintainability Improvement	Related Trends In State-of-the-Art Equipment	Potentially Applicable Design-For-Repair Concepts
Accessibility:		
o Excessive number of fasteners on access panels/doors	o Access doors (with latches) provide good accessibility o Access panels (with numerous torqued fasteners) provide less than optimum accessibility	o Integrated Electronics Applications - to miniaturize R/T unit and eliminate cooling requirement, thereby providing installation in more accessible compartments o Functional Layout Optimization - to identify optimum TACAN locations for accessibility
Repairability:		
o Multi-wafer rotary switches	o Rotary switches are still used for many control functions o Thumbwheel switches, pushbutton switches, etc. eliminate some rotary switch problems	o Mechanical Interface Optimization - to determine advantages of replacing rotary switches with more repairable switches
o Cooling air plenums, heat sinks, etc. increase complexity of chassis repair	o TACAN receiver/transmitters generally require forced air electronic cooling o Decreasing power consumption and heat dissipation associated with LSI technology is reducing cooling requirements	o Integrated Electronics Applications - to eliminate cooling air requirements by reducing power consumption o Physical Partitioning Optimization - to consider chassis elimination and use of flat wiring assemblies for SRU interconnection
o Non-modularity of control units	o Plug-in subassemblies used extensively to simplify repair o Thumbwheel switches offer the advantage of modularity (over rotary switches) if used in the switching function	o Mechanical Interface Optimization - to identify improved switching technology for replacing rotary switches with modular switching o Integrated Electronics Applications - to provide solid state displays, pushbutton panels, etc.

NAVIGATION SUBSYSTEM: DESIGN FEATURES AND TECHNIQUES DEFINITION (page 2 of 3)

Areas Identified as Needing Maintainability Improvement	Related Trends In State-of-the-Art Equipment	Potentially Applicable Design-For-Repair Concepts
Control Displays:		
o TACAN antenna selector switch location	o Antenna selector switches either on TACAN control panel or some other panel	o Functional Layout Optimization - to consider the advantages of TACAN antenna selector switch location on the TACAN control unit
Testability:		
o Throughness of subsystem/system BIT of TACAN interfaces	o TACAN BIT verifies subsystem operation but does not verify *interface with other subsystems* such as inertial navigation	o Federated BIT/System BIT - for providing more comprehensive navigation subsystem checks o BIT - changes to test concept to provide better verification of TACAN outputs
o Lack of TACAN BIT failure analysis features	o TACAN systems are not equipped with BIT meters for checking antenna matching, etc. o TACAN systems are not equipped with BIT meters for checking antenna matching, etc. o Some TACAN systems have LRU failure indicators on control unit	o BIT versus External Test Equipment Optimization - to identify best method for fault-isolation to the antenna system o Non-Destructive Evaluation - to consider new methods for checking SWR power out and receiver sensivity
Preventive Maintenance:		
o Alignments required to maintain optimum performance	o Scheduled inspections of TACAN are not required by -6 manual	o Integrated Electronics Applications - to define how adjustable circuitry can be replaced by digital signal processing

NAVIGATION SUBSYSTEM: DESIGN FEATURES AND TECHNIQUES DEFINITION (page 3 of 3)

Areas Identified as Needing Maintainability Improvement	Related Trends In State-of-the-Art Equipment	Potentially Applicable Design-For-Repair Concepts
Interfacing:		
o Use of inter-rack wiring	o TACAN shock-mount racks include power switching relays, fuses, and interface wiring with connectors o TACAN racks are used to adapt TACAN units to different aircraft installations	o Physical Partitioning Optimization - with emphasis on eliminating relays, fuses, etc. in racks o Electrical Interface Optimization - to consider advantages of replacing rack wiring with direct interunit cables
o Receiver/transmitter test connectors do not stand up well to intermediate shop usage	o Test connectors are provided for use with intermediate/depot level test equipment o No access is allowed through these connectors when the RIW concept is utilized o Connectors with high pin density and small pin diameter are used.	o Test Commonality Optimization - to consider BIT techniques to eliminate test access requirements o Connecting Device Optimization - with emphasis on adequate connector ruggedness

RECONNAISSANCE SUBSYSTEM: DESIGN FEATURES AND TECHNIQUES DEFINITION

Areas Identified as Needing Maintainability Improvement	Related Trends In State-of-the-Art Equipment	**Potentially Applicable Design-For-Repair Concepts**
Accessibility:		
• Radar scope camera mounting/ installation concept which requires camera removal for scope maintenance.	• Radar scope cameras mounted directly on front of scopes (removal is required for scope maintenance). • Remote film recorders using slaved CRTs. • Magnetic tape recording of video.	• Fiber Optics Application - to allow remote location of camera. • Integrated Electronics Application - for video signal processing into magnetic tape recording format and application of remote recorder.
• Camera location (or design) such that installation/ removal of film pack can only be accomplished by maintenance personnel.	• Air-crews can and do install, test and remove film packs of some cameras.	• Fiber Optics Applications - to allow camera location in cockpit. • Integrated Electronics Application - for video signal processing and magnetic tape recording.
• Camera control unit located (in avionics bay) remotely from cockpit controls and camera.	• Control electronics normally located in cockpit control unit. • Camera electronics located in camera unit.	• Integrate Electronics Application - to miniaturize camera electronics leading to simplified system consisting of camera and cockpit control unit. • Physical Partitioning Optimization - to define number of LRUs required. • Functional Layout Optimization - to identify optimum camera LRU locations in aircraft.
• Camera compartment temperature switches in poorly accessible locations.		• Functional Layout Optimization - to provide good accessibility for test, removal and installation.

Reconnaissance Subsystem: Design Features And Techniques Definition (Page 2 of 3)

Areas Identified as Needing Maintainability Improvement	Related Trends In State-of-the-Art Equipment	Potentially Applicable Design-For-Repair Concepts
Repairability:		
• Lack of modularity in control units.	• Plug-in SRUs (printed circuit boards, modules, etc.) used extensively in applications other than cockpit control units.	• Physical Partitioning Optimization - to define optimum amount of electronics in control unit versus camera unit and to partion electronics into SRUs.
• Lack of modularity in camera.	• Plug-in SRUs to electronics used extensively in applications other than camera.	• Physical Partitioning Optimization - to group camera electronics on plug-in circuit boards.
Testability:		
• Camera test panel not co-located with camera.	• Camera test normally accomplished in conjunction with film loading.	• Functional Layout Optimization - to identify optimum location of camera BIT controls.
• Aircrew checks of camera using BIT requires a second person for usual checks.	• BIT features operable from cockpit by aircrew with maintenance support.	• BIT Applications - to provide more comprehensive test of camera operation and display of same in cockpit.
• Cockpit checks of camera operation by other than usual means are necessary.	• Film counters are used on some camera systems. • Film remaining warning lights are used on some systems.	• BIT Application - to provide improved means for verifying film advancement and film remaining.
Preventive Maintenance:		
• Camera electro-mechanical mechanisms which require lubrication, cleaning, alignment, etc., on a periodic basis.	• Gear/bearing materials and lubricants which minimize or eliminate need for periodic lubrication.	• Reliability Centered Maintenance Concept Application - to eliminate scheduled maintenance.

Reconnaissance Subsystem: Design Features And Techniques Definition (Sheet 3 of 3)

Areas Identified as Needing Maintainability Improvement	Related Trends In State-of-the-Art Equipment	Potentially Applicable Design-For-Repair Concepts
	• Extended inspection intervals to coincide with major aircraft inspections.	• Integrated Electronics Applications - to process video electronically and eliminate electro-mechanical functions.
Electrical Interfaces: • Electrical cables/connectors hidden from view.	• Radar scope camera cables connected under instrument panel. • Radar scope cameras interconnected with scope.	• Electrical Interface Optimization - to optimize location of connectors • Fiber Optics Application - to allow remote location of camera with improved connector accessibility.

WEAPONS DELIVERY EQUIPMENT: DESIGN FEATURES AND TECHNIQUES DEFINITION

Areas Identified as Needing Maintainability Improvement	Related Trends In State-of-the-Art Equipment	**Potentially Applicable Design-For-Repair Concepts**
Accessibility:		
• Inadequate service loop in cables limits accessibility to connectors on back of LRU		• Electrical Interface Optimization - with emphasis on optimum cable length
Repairability:		
• Pins in connectors difficult to remove/replace	• Common problem associated with connectors in avionics systems. Pin extraction/insertion tool design/quality is a related factor.	• Electrical Interface Optimization - with case of pin replacement as one criterion. • Fiber Optics/Multiplexing Application - to reduce density of connections in connectors, thereby allowing use of more rugged and repairable contacts.
Testability:		
• Stray voltage checks with test set are required prior to loading weapons. • BIT is not normally adequate for fault-isolation to the defective LRU (test set is necessary).	• All weapons launch stations are given a stray voltage test as part of weapons loading. In addition, stations are functionally checked on a scheduled basis or following maintenance. • Fault-isolation between weapon launcher and weapon control system requires external test equipment.	• BIT Versus External Test Equipment Optimization - to identify BIT techniques for stray voltage testing. • Non-Destructive Evaluation Techniques Application - for built-in stray voltage tests. • Federated BIT/System BIT Optimization - to identify improved BIT concept and reduce need for flight-line test equipment.

Weapons Delivery Equipment: Design Features and Techniques Definition (Page 2 of 2)

Areas Identified as Needing Maintainability Improvement	Related Trends In State-of-the-Art Equipment	Potentially Applicable Design-For-Repair Concepts
		• <u>BIT-Software Versus Hardware Optimization</u> - to define improved BIT techniques. • <u>BIT Versus External Test Equipment Optimization</u> - to define areas where BIT can provide improvements over external test equipment capability.
• BIT circuitry fails more frequently than primary functions.		• <u>Microprocessor application</u> - for higher reliability. • <u>BIT-Software Versus Hardware Optimization</u> - to minimize reliance on BIT hardware.
• LRUs are difficult to fault-isolate to the SRU level.		• <u>Test Commonality/Optimization</u> - to define techniques for using LRU BIT features to aid in LRU fault-isolation.
<u>Mechanical Interfaces:</u>		
• Soft metal mounting screws with easily stripped torque slots used in cockpit.	• Quarter-turn quick-release fasteners are normally utilized for mounting LRUs in cockpit consoles or panels.	• <u>Mechanical Interface Optimization</u> - improving cockpit mounting techniques.
<u>Electrical Interfaces:</u>		
• Problem with wires pulling and breaking at quick-disconnect connectors.	• Common avionics equipment problem associated with insufficient cable lengths or improper connector backshell/collar selection.	• <u>Electrical Interface Optimization</u> - with minimizing stress on pins and wires as a major consideration. • <u>Fiber Optics/Multiplexing Application</u> to reduce size of wire bundles.

WEAPONS CONTROL SUBSYSTEM: DESIGN FEATURES AND TECHNIQUES DEFINITION

Areas Identified as Needing Maintainability Improvement	Related Trends In State-of-the-Art Equipment	Potentially Applicable Design-For-Repair Concepts
Accessibility:		
• Excessive number of fasteners on doors/panels	• Access doors equipped with minimum number of latches providing good accessibility • Panels and access doors equipped with torqued fasteners increase access time	• Functional Layout Optimization - to identify optimum locations for electronics • Mechanical Interface Optimization - to identify optimum fastener concepts for minimizing number required.
• Fuses located in convenient locations	• Fuses are presently located on front and back of units, in equipment racks, and on panels	• Functional Layout Optimization - to identify best locations for fuses and circuit breakers
• Undersize access panels/ doors		• Integrated Electronics Application - to miniaturize LRUs to allow flexibility in location • Functional Layout Optimization - to place units for avoidance of accessibility problems
• Internal access (such as through avionics compartment) rather than external access to radome fasteners	• Both internal and external fasteners for swing-away radomes are being utilized	• Mechanical Interface Optimization - to identify optimum radome fasteners
• Location of system interface connectors, couplings, fittings, etc., on equipment racks	• Many equipment racks have connectors, fittings, etc., located for poor accessibility	• Connecting Device Optimization - to eliminate rack internal wiring, connectors, etc. • Functional Layout Optimization - to identify locations for connectors, fittings, etc., for maximum accessibility

WEAPONS CONTROL SUBSYSTEM: DESIGN FEATURES AND TECHNIQUES DEFINITION (Page 2 of 6)

Areas Identified as Needing Maintainability Improvement	Related Trends In State-of-the-Art Equipment	Potentially Applicable Design-For-Repair Concepts
<u>Repairability:</u>		
• Excessive system complexity (as measured by number of LRUs)	• Size, weight and volume required for electronic functions is being greatly reduced by use of integrated electronics	• <u>Integrated Electronics Application</u> - to allow packaging of subsystem in minimum number of LRUs • <u>Physical Partitioning Optimization</u> - to define optimum number of LRUs
• SRUs which require marriage alignments after installation in LRU	• Digital signal processing is being utilized in increasing numbers of applications	• <u>Integrated Electronics Application</u> - to allow use of digital signal processing techniques
• LRU liquid cooling system design such that cooling oil must be drained/refilled for most LRU repairs	• Liquid cooling systems are used extensively for cooling of high-power transmitter components	• <u>Integrated Electronics Application</u> - to reduce or eliminate cooling requirements
• Difficult connector contact removal/insertion	• Common problem found with many connectors having snap in contacts. Insertion/removal tool quality and design seems to be directly associated with this problem	• <u>Connecting Device Optimization</u> - to miniaturize contact replacement problems • <u>Fiberoptics/Multiplexing Applications</u> - to reduce contact density, etc.
• LRU fasteners (for mounting unit in rack) which cannot be replaced using common hand tools	• Avionics shop replaceable fasteners are available and are used in some applications	• <u>Mechanical Interface Optimization</u> - to identify repairable fasteners for use on LRUs
• Pressurized LRUs which can be hazardous if maintenance instructions are not followed precisely	• Pressurized LRUs are being utilized less frequently	• <u>Physical Partitioning Optimization</u> - to minimize need to go inside of pressurized areas

WEAPONS CONTROL SUBSYSTEM: DESIGN FEATURES AND TECHNIQUES DEFINITION (Page 3 of 6)

Areas Identified as Needing Maintainability Improvement	Related Trends In State-of-the-Art Equipment	Potentially Applicable Design-For-Repair Concepts
• LRU liquid cooling system servicing (following LRU repair) which is excessively time consuming	• Liquid cooling systems are used extensively for cooling of high-power transmitter components	• Integrated Electronics Application - to reduce/eliminate cooling requirements • Physical Partitioning Optimization - to minimize need to go into oil-filled areas of units
Testability:		
• Insufficient BIT capability for verification/fault-isolation of common radar malfunctions (false targets, range/angle tracking problems, etc.)	• Common problem frequently associated with BIT features	• BIT Versus External Test Equipment Optimization - to define requirements for external test • BIT Software Versus Hardware Optimization - to define improved BIT methods • Federated BIT/System BIT Optimization - to define improved BIT methods
• In adequate BIT fault-diagnostic capability for identification of defective LRU	• Common problem associated with BIT diagnostics, however, individual LRU fault-indicators reduces problem somewhat	• Federated BIT/System BIT Optimization - to trade-off concepts for best fault-isolation capability
• BIT circuitry which provides inconsistent test results and insufficient data for analysis of intermittent failures	• Common problem associated with complex avionics systems	• Federated BIT/System BIT Optimization - to define optimum amount of LRU BIT • Microprocessor Applications - to provide improved LRU BIT
• Flightline test equipment (such as collimator) required for test at optical systems	• Flightline test equipment requirements are avoided	• BIT Versus External Test Equipment Optimization - to identify optimum methods for avoiding flightline test equipment

WEAPONS CONTROL SUBSYSTEM: DESIGN FEATURES AND TECHNIQUES DEFINITION (Page 4 of 6)

Areas Identified as Needing Maintainability Improvement	Related Trends In State-of-the-Art Equipment	Potentially Applicable Design-For-Repair Concepts
• LRU fault-indicators (or system automatic fault-diagnostics) which provide 60-70% confidence level	• BIT circuitry (for driving fault-indicators) cannot provide 100% confidence levels. Levels of 80-[illegible]% confidence are being achieved in some applications	• BIT Software Versus Hardware Optimization - to define improved BIT techniques • Microprocessor Application - to improve BIT capability
• Differences between aircraft and ground power systems which require operation of aircraft engine to duplicate airborne malfunction	• Improved aircraft power system designs have almost eliminated this problem	• Integrated Electronics Applications - distributed power subsystems such that LRUs operate on basic aircraft power rather than unique generated power forms
• System/LRU BIT failures cannot be duplicated on the shop test equipment	• Common problem associated with the lack of hot-mockup for use in the shop	• Test Commonality Optimization - to explore possibilities of utilizing BIT capabilities in shop
• Flightline test equipment is required for analysis of BIT failures	• Flightline test equipment, especially for BIT failure analysis, is not required for support	• BIT Versus External Test Equipment Optimization - to consider feasibility of eliminating flightline equipment
• BIT controls/displays located only in cockpit	• BIT controls/indicators are frequently found in the cockpit or on an LRU in the avionics bay	• Functional Layout Optimization - to identify most effective locations for BIT controls/displays
• Use of fuses (rather than circuit breakers) for overload protection	• Fu es and circuit breakers are being utilized	• Integrated Electronics Application - to provide built-in overload protection

WEAPONS CONTROL SUBSYSTEM: DESIGN FEATURES AND TECHNIQUES DEFINITION (Page 5 of 6)

Areas Identified as Needing Maintainability Improvement	Related Trends In State-of-the-Art Equipment	Potentially Applicable Design-For-Repair Concepts
Handling:		
• Excessive weight of LRUs (especially, receiver/transmitters) which makes necessitates support equipment for handling	• Common problem with fielded radar sets	• Integrated Electronics Application - to reduce volume and weight of electronics • Physical Partitioning Optimization - to result in LRUs that can be easily manhandled by two men
• LRU alignments (such as antenna electrical boresight) which are sensitive to the shock/vibration as encountered during maintenance handling	• New antenna designs have eliminated this problem	• Mechanical Interfaces Optimization - to ensure protection for fragile components
Electrical Interfaces:		
• Electronic equipment racks with internal rack wiring for interconnecting LRUs	• Both internal rack wiring and direct LRU interconnection with harnesses are found in fielded equipment	• Connecting Devices Optimization - to eliminate rack internal wiring, connectors, etc. • Fiberoptics/Multiplexing Applications - to minimize interconnections, reduce number of connectors, etc.
• Wiring problems associated with poor aging characteristics	• Non-potted connectors simplify repair • Wiring being used in new systems could have the same problem after ten years of environmental exposure	• Fiberoptics/Multiplexing Applications - to utilize new type of conductor, reduce wire bundle sizes, etc.

WEAPONS CONTROL SUBSYSTEM: DESIGN FEATURES AND TECHNIQUES DEFINITION (Page 6 of 6)

Areas Identified as Needing Maintainability Improvement	Related Trends In State-of-the-Art Equipment	Potentially Applicable Design-For-Repair Concepts
• Use of flat ribbon cable (for interconnecting LRUs/SRUs) which is prone to breakage at the connectors	• Common problem with flat ribbon cables and connectors presently being used on fielded equipment	• <u>Connecting Devices Optimization</u> - to identify improved connector, cable designs for use in avionics
<u>Preventive Maintenance:</u>		
• Waveguide dehumidification which requires frequent servicing to avoid moisture accumulation in waveguides	• Dry, pressurized air is required for use in waveguides normally. Servicing requirements for the dehumidification systems are similar	• <u>Reliability Centered Maintenance Concept Application</u> - to ensure proper preventive maintenance is established for mechanical items and desiccants
• LRUs which require alignment for optimum performance due to the use of analog signal processing	• Digital signal processing is being used extensively in new equipment	• <u>Integrated Electronics Application</u> - for digital signal processing and elimination of analog functions

SUPPORT SYSTEM: DESIGN FEATURES AND TECHNIQUES DEFINITION

Areas Identified as Needing Maintainability Improvement	Related Trends In State-of-the-Art Equipment	Potentially Applicable Design-For-Repair Concepts
Debriefing:		
o System status cannot be determined during debriefing of aircrew (example: camera systems status unknown until film processed)	o Common problem with camera systems associated with recording systems. Magnetic tape recording systems avoid this problem	o Integrated Electronics Applications - For replacement of film recording systems with video tape systems o Built-In-Test Optimization - to ensure status of system is provided to aircrew
o System maintenance experience essential for debriefers	o Common problem associated with systems which are functionally complex	o Design-for-repair concepts not applicable
o Extensive data concerning malfunctions is essential for effective maintenance but is not normally entered on the debriefing forms	o Common problem associated with systems which are functionally complex	o Design-for-repair concepts not applicable
o Shop representatives (acting as technical advisors) are required in debriefing	o Common problem associated with systems which are functionally complex	
o Correct assignment of work unit codes is difficult due to the integrated nature of the avionics subsystems that might cause problem	o Common problem associated with integrated avionics which is maintained by more than one shop	o Federated BIT Versus System BIT Optimization - to provide positive indications as to defective subsystem/LRU

SUPPORT SYSTEM: DESIGN FEATURES AND TECHNIQUES DEFINITION (page 2 of 10)

Areas Identified as Needing Maintainability Improvement	Related Trends In State-of-the-Art Equipment	Potentially Applicable Design-For-Repair Concepts
<u>Depot Support:</u>		
o Inadequate spares in supply system		o <u>Standard Electronic Modules</u> - to provide both improved reliability and more readily available modules for LRU repairs o <u>Standardization of Electronic Parts</u> - to provide readily available parts in order to reduce awaiting-parts times
o Intermediate level shop must test and align items received from depot prior to issue for installation in aircraft	o Digital signal processing is eliminating most requirements for alignments	o <u>Integrated Electronics Applications</u> - to provide ditigal signal processing in other than analog signal processing
o High percent rate by intermediate level shop for items repaired in depot shop	o Common problem associated with items tested on test stations rather than hot mock-ups	o <u>Test Commonality Optimization</u> - to ensure appropriate traceability of test tolerances, test procedures, etc.
<u>Pre-, In-, Post-Flight Inspections:</u>		
o Operational test cannot be accomplished in some circumstances with support equipment (example: low-light level checks of electro-optical equipment)		o <u>Built-In-Test Optimization</u> - to provide system test capabilities under all conditions without support equipment

SUPPORT SYSTEM: DESIGN FEATURES AND TECHNIQUES DEFINITION (page 3 of 10)

Areas Identified as Needing Maintainability Improvement	Related Trends In State-of-the-Art Equipment	Potentially Applicable Design-For-Repair Concepts
Pre-, In-, Post-Flight Inspections: (cont)		
o Maintenance personnel are required to assist aircrews with operational checks		o Built-In-Test Optimization - to provide indications of proper operation of all critical system functions to the aircrew in the cockpit
o System operational checks are required following servicing	o Common requirement associated with camera system film loading	o Design-for-repair concept not applicable
Level of Base Repair:		
o Repair at the component level is allowed in the intermediate level	o Most LRUs incorporate SRUs which are replaced at intermediate level and repaired in a depot shop	o Physical Partitioning Optimization - to investigate application of SRU concept for repair of LRUs
o LRUs that are beyond intermediate level repair capability and must be sent to the depot for repair	o SRU concept is used extensively	o Physical Partitioning Optimization - to investigate application of SRU concept for repair of LRUs
o LRU chassis beyond repair capability at intermediate shop and must be repaired at depot (entails shipping complete LRU to depot)	o Chassis is eliminated in some LRUs and SRUs directly interconnected by flat ribbon cables	o Physical Partitioning Optimization - to investigate LRU configurations composed entirely of SRUs

SUPPORT SYSTEM: DESIGN FEATURES AND TECHNIQUES DEFINITION (page 4 of 10)

Areas Identified as Needing Maintainability Improvement	Related Trends In State-of-the-Art Equipment	Potentially Applicable Design-For-Repair Concepts
<u>Maintenance Data Collection, Documentation and Feedback System:</u>		
o Aircraft history not reviewed by maintenance personnel prior to accomplishing maintenance		o Design-for-repair concepts not applicable
o Logs generated manually to provide historical data on malfunction, reports, corrective action, etc.		o Design-for-repair concepts not applicable
o Analysis of historical data accomplished manually by maintenance personnel working problem		o Design-for-repair concepts not applicable
<u>Maintenance Organization:</u>		
o Three-level maintenance organization is essential to effective maintenance	o Simple system composed of less than four LRUs are often time maintained by intermediate level shop personnel dispatched to the flightline as required	o <u>Integrated Electronics Applications</u> - to miniturize electronics for packaging in fewer LRUs o <u>Physical Partitioning Optimization</u> - to evaluate advantages associated with minimizing the number of LRUs
o Avionics maintenance personnel are required to perform aircraft servicing tasks between missions	o Applies primarily to recording systems which presently require replacement of film, tape, etc. between missions	o Design-for-repair concepts not applicable

SUPPORT SYSTEM: DESIGN FEATURES AND TECHNIQUES DEFINITION (page 5 of 10)

Areas Identified as Needing Maintainability Improvement	Related Trends In State-of-the-Art Equipment	Potentially Applicable Design-For-Repair Concepts
<u>Maintenance Organization</u>: (cont)		
o Servicing/maintenance tasks are the responsibility of more than one shop	o Common problem associated with radar oil cooling systems	o <u>Integrated Electronics Application</u> - to eliminate oil cooling requirements
<u>Organizational Level Age</u>:		
o LRU handling equipment required due to LRU weight or susceptability to handling damage	o Radar receiver/transmitter units presently weigh more than two men can easily handle	o <u>Integrated Electronics Application</u> - to minimize LRU weight o <u>Physical Partitioning Optimization</u> - to separate system into LRUs which are easily handled by two-man crew without handling equipment
o System level malfunctions cannot be duplicated in the shop due to the lack of hot mock-up	o Common problem with equipment which is supported only by LRU test stations at the intermediate level	o <u>Test Commonality Optimization</u> - to investigate advantages of utilizing BIT functions at intermediate level
o Inconsistencies between test tolerances/philosophies for BIT, intermediate shop equipment, and depot equipment	o Common problem with equipment which is tested on general purpose ATE	o <u>Test Commonality Optimization</u> - to ensure each lower maintenance level uses more open test tolerances and appropriate test concept
o Cooling oil servicing equipment which is time consuming to utilize	o Common problem with oil cooled radar servicing	o <u>Integrated Electronics Application</u> - to eliminate need for oil cooling and associated servicing equipment
o Flightline test sets required for system checks	o Flightline support equipment requirements are being minimized	o <u>BIT Versus External Test Equipment</u> - to investigate advantages of eliminating flightline equipment requirements

SUPPORT SYSTEM: DESIGN FEATURES AND TECHNIQUES DEFINITION (page 6 of 10)

Areas Identified as Needing Maintainability Improvement	Related Trends In State-of-the-Art Equipment	Potentially Applicable Design-For-Repair Concepts
Organizational Level Age: (cont)		
o Test set interface cables are high failure items	o Common problem associated with intermediate level equipment	o Connecting Devices Optimization - to ensure adequate ruggedness for hold environment
o Insufficient test access provided by test sets		o Connecting Devices Optimization - to provide adequate access to interface signals
o Insufficient test thoroughness with shop test equipment		o Design-for-repair concepts not applicable
Preventive Maintenance:		
o Scheduled testing, lubrication and cleaning of LURs in the intermediate shop on a scheduled basis	o Requirements associated with electro-mechanical recording systems	o Design-for-repair concepts not applicable
o Scheduled inspection/alignment of equipment in aircraft required to ensure satisfactory performance	o Solid-state electronics and digital signal processing is eliminating recurring alignment requirements	o Integrated Electronics Application - to utilize solid-state electronics and digital signal processing to minimize need for periodic alignments o Reliability Centered Maintenance Concept Application - to minimize maintenance to essential tasks

SUPPORT SYSTEM: DESIGN FEATURES AND TECHNIQUES DEFINITION (page 7 of 10)

Areas Identified as Needing Maintainability Improvement	Related Trends In State-of-the-Art Equipment	Potentially Applicable Design-For-Repair Concepts
Preventive Maintenance: (cont)		
o LRUs must be tested and aligned by intermediate shop prior to issue for aircraft installation	o Solid-state electronics and digital signal processing is eliminating recurring alignment requirements	o Integrated Electronics Application - to utilize solid-state electronics and digital signal processing to minimize need for periodic alignments o Reliability Centered Maintenance Concept Application - to minimize maintenance to essential tasks
Technical Manuals:		
o Confusing procedures in manuals as a result of complexity, errors, or excessive use of supplement pages		o Design-for-repair concepts not applicable
o Insufficient technical data in flightline manual on signal flow, test point signal values, etc.	o Common problem with complex systems having many interface signals	o Design-for-repair concepts not applicable
o Insufficient data in flightline manuals on BIT	o Flightline manuals presently provide very limited BIT theory of operation, etc.	o Design-for-repair concepts not applicable
o Insufficient technical data (such as detailed schematics) in intermediate manuals	o Shop manuals for intermediate level use presently contain data of a functional nature. Detailed data is avoided to minimize manual complexity	o Design-for-repair concepts not applicable

SUPPORT SYSTEM: DESIGN FEATURES AND TECHNIQUES DEFINITION (page 8 of 10)

Areas Identified as Needing Maintainability Improvement	Related Trends In State-of-the-Art Equipment	Potentially Applicable Design-For-Repair Concepts
Technical Manuals: (cont)		
o Modifications/software changes not documented in a timely fashion in the intermediate level manuals	o Common problems associated with initial fielding of general purpose ATE	o Design-for-repair concepts not applicable
o Overly complex fault-diagnostic logic trees in flightline and shop manuals	o Extremely simplified fault-diagnostic information is presented in flightline manuals for state-of-the-art equipment	o Design-for-repair concepts not applicable
o Intermediate level manuals do not clearly describe level of repair intended	o Uncommon problem associated with combining intermediate and depot repair procedures in a single manual	o Design-for-repair concepts not applicable
o Depot level manuals lack sufficient data for test/repair of repairables		o Design-for-repair concepts not applicable
Training and Personnel Skill Levels:		
o Electronic component replacement in intermediate level shop requires 7-level skills and only 5-level skills are available normally	o LRU repair is commonly limited to SRU replacement	o Physical Partitionint Optimization - with extensive use of SRUs to simplify LRU repair

SUPPORT SYSTEM: DESIGN FEATURES AND TECHNIQUES DEFINITION (page 9 of 10)

Areas Identified as Needing Maintainability Improvement	Related Trends In State-of-the-Art Equipment	Potentially Applicable Design-For-Repair Concepts
<u>Training and Personnel Skill Levels:</u> (cont)		
o Flightline maintenance requires 5 to 7-level skills and only 3 to 5-level skills are available (weapons control and armament control system support)	o Common problem associated with complex subsystems	o <u>Integrated Electronics Application</u> - to reduce volume of electronics for packaging in fewer LRUs o <u>Physical Partitioning Optimization</u> - to package subsystem in fewer LRUs to reduce complexity
o Extensive on the job experience is required before maintenance proficiency is developed (weapons control and armament control system support)	o Common problem associated with complex subsystems	o <u>Integrated Electronics Application</u> - to reduce volume of electronics for packaging in fewer LRUs o <u>Physical Partitioning Optimization</u> - to package subsystem in fewer LRUs to reduce complexity o <u>Built-In-Test Applications</u> - to simplify system test and fault-isolation o <u>Federated BIT Versus System BIT Optimization</u> - for positive identification of defective LRUs causing BIT failures
<u>Troubleshooting Methods:</u>		
o Fault-isolation of LRU by substitution method is impractical due to the lack of SRUs	o Most LRU incorporate SRUs to simplify repair	o <u>Physical Partitioning Optimization</u> - to ensure use of SRUs
o BIT failure analyzing requires use of flightline test equipment	o BIT is replacing flightline test equipment	o <u>Federated BIT Versus System BIT Optimization</u> - to investigate potential for improving fault-isolation capability

SUPPORT SYSTEM: DESIGN FEATURES AND TECHNIQUES DEFINITION (page 10 of 10)

Areas Identified as Needing Maintainability Improvement	Related Trends In State-of-the-Art Equipment	Potentially Applicable Design-For-Repair Concepts
<u>Troubleshooting Methods:</u> (cont)		
o Fault-isolation by shop testing LRUs in order of failure probability rather than use flightline test equipment	o BIT is replacing flightline test equipment	o <u>Built-In-Test Application</u> - to eliminate requirement for flightline test equipment
o BIT fault-diagnostics is ineffective in identifying defective LRU	o Common problem with system oriented BIT concepts	o <u>Federated BIT Versus System BIT Optimization</u> - to investigate potential for improving BIT confidence
o Flightline test equipment for system checks is time consuming to utilize	o Flightline test equipment requirements are being minimized or eliminated	o <u>Built-In-Test Application</u> - for elimination of flightline test equipment requirement
o Automatic fault-diagnostic routines for ATE are inoperative or ineffective		o Design-for-repair concepts not applicable
o Aircraft or shop test equipment must be used as a hot mock-up to resolve inconsistent test results between system BIT and shop test stations	o Common problem where LRU test stations are utilized at intermediate level rather than a hot mock-up	o <u>Test Commonality Optimization</u> - to ensure compatibility of test concepts at various maintenance levels
o Significant amount of logical analysis is required to supplement automatic diagnostics on intermediate level ATE		o Design-for-repair concepts not applicable

SECTION VIII

DESIGN-FOR-REPAIR CONCEPT/MAINTENANCE CONCEPT EVALUATION

COMMUNICATION SUBSYSTEM: DESIGN-FOR-REPAIR CONCEPT/MAINTENANCE CONCEPT EVALUATION

Design-For-Repair Concepts/Maintenance Concept Applications	Magnitude of Support Requirements Impact	Major Impact Areas					Maintenance Levels Impacted			
							2-Level Maintenance Organization		3-Level Maintenance Organization	
		Support Equipment	Labor	Training	Technical Data	Supply	Without RIW	With RIW	Without RIW	With RIW
Optimized Physical Partitioning:										
o Trade-off antenna switching in R/T unit versus aircraft	Minor		X	X			Organizational	Organizational	Organizational	Organizational
o Trade-off locations for fuses/circuit breakers in aircraft versus on LRUs	Minor		X	X			Organizational	Organizational	Organizational	Organizational
Optimized Functional Layout:										
o Trade-off antenna switching locations in aircraft	Minor		X				Organizational	Organizational	Organizational	Organizational
o Trade-off aircrew and maintenance accessibility to preset frequency programmer	Minor		X				Organizational	Organizational	Organizational	Organizational
o Trade-off possible fuse/circuit breaker locations in aircraft and on LRUs	Minor		X	X			Organizational	Organizational	Organizational	Organizational
o Trade-off location of all components on SRUs (eliminates chassis) versus chassis utilization	Major		X	X	X	X	Depot	Contractor	Intermediate, Depot	Intermediate, Contractor
Optimized Electrical Interfaces:										
o Trade-off interconnection of SRUs by flat cable assemblies and other concepts	Minor		X			X	Depot	Contractor	Intermediate, Depot	Intermediate, Contractor
o Trade-off new switching technology versus rotary switches	Major		X			X	Depot	Contractor	Intermediate, Depot	Intermediate, Contractor
o Trade-off control knob fasteners	Minor		X				Organizational	No Impact	Organizational	No Impact

COMMUNICATION SUBSYSTEM: DESIGN-FOR-REPAIR CONCEPT/MAINTENANCE CONCEPT EVALUATION (page 2 of 2)

Design-For-Repair Concepts/Maintenance Concept Applications	Magnitude of Support Requirements Impact	Major Impact Areas					Maintenance Levels Impacted			
							2-Level Maintenance Organization		3-Level Maintenance Organization	
		Support Equip-ment	Labor	Train-ing	Tech-nical Data	Sup-ply	Without RIW	With RIW	Without RIW	With RIW
Integrate Digital Applications:										
o Elimination of electro-mechanical servos	Major		X				Depot	Contractor	Intermediate, Depot	Intermediate, Contractor
o Elimination of alignments/ preventive, scheduled mainte-nance	Major		X				Depot	Contractor	Intermediate, Depot	Intermediate, Contractor
Continuous Fault-Monitoring:										
o Quanitative flightline testing continuously versus preventive, scheduled maintenance	Major	X	X	X			Organizational	Organizational	Organizational	Organizational
BIT Versus External Test Equipment:										
o Built-in-test equipment versus flightline radio test sets presently utilized	Major	X	X		X		Organizational	Organizational	Organizational	Organizational
Optimized Test Commonality:										
o Built-in-test equipment versus external shop test equipment	Major	X	X			X	Depot	Contractor	Intermediate, Depot	Intermediate, Contractor

NAVIGATION SUBSYSTEM: DESIGN-FOR-REPAIR CONCEPT/MAINTENANCE CONCEPT EVALUATION

Design-For-Repair Concepts/Maintenance Concept Applications	Magnitude of Support Requirements Impact	Major Impact Areas: Support Equip-ment	Labor	Train-ing	Tech-nical Data	Sup-ply	Maintenance Levels Impacted: 2-Level Maintenance Organization Without RIW	2-Level With RIW	3-Level Maintenance Organization Without RIW	3-Level With RIW
Optimized Physical Partitioning:										
o Improved LRU repairability by optimized component partitioning between LRU chassis and SRUs	Major		X	X	X	X	Depot	Contractor	Intermediate, Depot	Intermediate, Contractor
o Improved subsystem repairability by optimizing partitioning of components between rack and LRUs	Minor		X	X	X	X	Organizational	Organizational	Organizational, Intermediate	Organizational, Intermediate
Optimized Functional Layout:										
o Minimized access times by optimizing subsystem layout in aircraft	Minor		X				Organizational	Organizational	Organizational	Organizational
o Enhanced subsystem repairability thru consolidation of controls on the control unit in cockpit	Minor		X				Organizational	Organizational	Organizational	Organizational
Optimized Electrical Interfaces:										
o Improved system repairability by optimizing use of intra rack wiring versus use of wiring harnesses for direct LRU and system interconnection	Minor		X	X		X	Organizational	Organizational	Organizational, Intermediate	Organizational, Intermediate
Optimized Mechanical Interfaces:										
o Optimize repairability by trade-off of advanced switching concepts against multi-wafer rotary switches in control units	Major		X			X	Depot	Contractor	Intermediate, Depot	Contractor

NAVIGATION SUBSYSTEM: DESIGN-FOR-REPAIR CONCEPT/MAINTENANCE CONCEPT EVALUATION (page 2 of 3)

Design-For-Repair Concepts/Maintenance Concept Applications	Magnitude of Support Requirements Impact	Major Impact Areas					Maintenance Levels Impacted			
							2-Level Maintenance Organization		3-Level Maintenance Organization	
		Support Equipment	Labor	Training	Technical Data	Supply	Without RIW	With RIW	Without RIW	With RIW
Integrated Electronics Applications:										
o Improved accessibility by minimizing constraints on location of LRUs thru elimination of cooling air requirements and miniturization of R/T units	Minor		X				Organizational	Organizational	Organizational	Organizational
o Optimize control unit repairability by effective use of electronic displays, digital frequency entry, etc.	Major		X			X	Depot	Contractor	Intermediate, Depot	Contractor
Optimized BIT:										
o Trade-off BIT techniques for improved throughness to optimize navigation system repairability	Minor		X				Organizational	Organizational	Organizational	Organizational
Optimized BIT Versus External Test Equipment:										
o Trade-off requirements for flightline test sets versus more extensive BIT features	Major	X	X		X		Organizational	Organizational	Organizational	Organizational
Optimized Test Commonality:										
o Optimize common use of LRU BIT features at organizational, intermediate and depot levels to minimize requirements for test equipment and test access	Major	X	X			X	Depot	Contractor	Intermediate, Depot	Intermediate, Contractor

NAVIGATION SUBSYSTEM: DESIGN-FOR-REPAIR CONCEPT/MAINTENANCE CONCEPT EVALUATION (page 3 of 3)

Design-For-Repair Concepts/Maintenance Concept Applications	Magnitude of Support Requirements Impact	Major Impact Areas					Maintenance Levels Impacted			
							2-Level Maintenance Organization		3-Level Maintenance Organization	
		Support Equipment	Labor	Training	Technical Data	Supply	Without RIW	With RIW	Without RIW	With RIW
Optimized Federated BIT/System BIT:										
o Optimize navigation system repairability by trading-off BIT techniques	Minor		X	X		X	Organizational	Organizational	Organizational	Organizational
Optimized Connecting Devices:										
o Trade-off LRU test connection concepts to eliminate or minimize test connector problems	Minor		X			X	Depot	Contractor	Intermediate, Depot	Contractor

RECONNAISSANCE SUBSYSTEM: DESIGN-FOR-REPAIR CONCEPT/MAINTENANCE CONCEPT EVALUATION

Design-For-Concepts/Maintenance Concept Applications	Magnitude of Support Requirements Impact	Major Impact Areas					Maintenance Levels Impacted			
							2-Level Maintenance Organization		3-Level Maintenance Organization	
		Support Equipment	Labor	Training	Technical Data	Supply	Without RIW	With RIW	Without RIW	With RIW
Optimized Physical Partitioning:										
• Improved accessibility by co-location of equipment in fewer LRUs.	Minor		X				Organizational	Organizational	Organizational	Organizational
• Improved repairability by grouping electronic components on plug-in SRUs	Major		X	X		X	Depot	Contractor	Intermediate Depot	Contractor
• Improved repairability by location of all electronics in one LRU.	Minor		X	X			Organizational	Organizational	Organizational	Organizational
Optimized Functional Layout:										
• Improved accessibility by optimizing location of equipment in aircraft.	Minor		X				Organizational	Organizational	Organizational	Organizational
• Improved testability by optimizing locations for BIT controls and indicators in aircraft.	Minor		X				Organizational	Organizational	Organizational	Organizational
Optimized Electrical Interfaces:										
• Reduced damage to cables/connectors by locating connectors in visible locations.	Minor		X				Depot	Contractor	Intermediate Depot	Contractor

Reconnaissance Subsystem: Design-For-Repair Concept/Maintenance Concept Evaluation (Page 2 of 2)

Design-For-Concepts/Maintenance Concept Applications	Magnitude of Support Requirements Impact	Major Impact Areas					Maintenance Levels Impacted			
							2-Level Maintenance Organization		3-Level Maintenance Organization	
		Support Equipment	Labor	Training	Technical Data	Supply	Without RIW	With RIW	Without RIW	With RIW
Integrated Electronics Applications:										
• Electro-mechanical functions replaced with electronic video processing to eliminate preventive maintenance requirements, improve accessibility, etc.	Major		X				Depot	Contractor	Intermediate Depot	Contractor
Fiber Optics Applications:										
• Improved accessibility by use of remote camera locations.	Minor		X				Organizational	Organizational	Organizational	Organizational
• Reduced electrical interface problems by reducing interface constraints through use of remote camera location.	Minor		X				Organizational	Organizational	Organizational	Organizational
Reliability Centered Maintenance Concept Application:										
• Eliminated scheduled maintenance.	Major		X				Depot	Contractor	Intermediate	Intermediate

WEAPONS DELIVERY SUBSYSTEM: DESIGN-FOR-REPAIR CONCEPT/MAINTENANCE CONCEPT EVALUATION

Design-For-Concepts/Maintenance Concept Applications	Magnitude of Support Requirements Impact	Major Impact Areas					Maintenance Levels Impacted			
							2-Level Maintenance Organization		3-Level Maintenance Organization	
		Support Equip-ment	Labor	Train-ing	Tech-nical Data	Sup-ply	Without RIW	With RIW	Without RIW	With RIW
Optimized Electrical Interfaces:										
• Improved accessibility with adequate service loops in cables.	Minor		X				Organizational	Organizational	Organizational	Organizational
• Improved connector repairability by use of easily replaceable contacts.	Minor		X				Organizational	Organizational Contractor	Organizational Intermediate Depot	Organizational Contractor
• Reduced connector/cable maintenance by use of appropriate connector backshells and collars to minimize wire breakage	Minor		X				Organizational	Organizational	Organizational	Organizational
Fiber Optics/Multiplexing Applications:										
• Reduced connector/cable maintenance and improved maintainability through reduced conductor/contact densities.	Minor	X	X			X	Organizational	Organizational	Organizational	Organizational
Non-Destructive Evaluation Techniques:										
• Elimination of stray-voltage testing requirements	Major		X				Organizational	Organizational	Organizational	Organizational

Weapons Delivery Subsystem: Design-For-Repair Concept/Maintenance Concept Evaluation (Page 2 of 3)

Design-For-Concepts/Maintenance Concept Applications	Magnitude of Support Requirements Impact	Major Impact Areas					Maintenance Levels Impacted			
							2-Level Maintenance Organization		3-Level Maintenance Organization	
		Support Equipment	Labor	Training	Technical Data	Supply	Without RIW	With RIW	Without RIW	With RIW
Optimized BIT-Software Versus Hardware:										
• Reduced maintenance requirement by elimination of BIT hardware	Minor		X			X	Organizational Depot	Organizational Contractor	Organizational Intermediate Depot	Organizational Intermediate Contractor
Optimized BIT Versus External Test Equipment:										
• Simplified stray voltage test	Major		X				Organizational	Organizational	Organizational	Organizational
• Improved testability using automatic fault-diagnostics	Major	X	X				Organizational	Organizational	Organizational	Organizational
Optimized Federated BIT/System BIT:										
• Improved testability using automatic fault-diagnostics, fault indicators, etc.	Major	X	X				Organizational	Organizational	Organizational	Organizational
Microprocessor Applications:										
• Improved test capability and reliability of BIT function by use of microprocessor circuits	Major	X	X				Organizational	Organizational	Organizational	Organizational

Weapons Delivery Subsystem: Design-For-Repair Concept/Maintenance Concept Evaluation (Page 3 of 3)

Design-For-Concepts/Maintenance Concept Applications	Magnitude of Support Requirements Impact	Major Impact Areas					Maintenance Levels Impacted			
							2-Level Maintenance Organization		3-Level Maintenance Organization	
		Support Equipment	Labor	Training	Technical Data	Supply	Without RIW	With RIW	Without RIW	With RIW
Optimized Test Commonality:										
• Improved testability by use of LRU BIT, features in the shop	Major	X	X	X	X		Depot	Contractor	Intermediate Depot	Intermediate Contractor

WEAPONS CONTROL SUBSYSTEM: DESIGN-FOR-REPAIR CONCEPT/MAINTENANCE CONCEPT EVALUATION

Design-For-Concepts/Maintenance Concept Applications	Magnitude of Support Requirements Impact	Major Impact Areas					Maintenance Levels Impacted			
							2-Level Maintenance Organization		3-Level Maintenance Organization	
		Support Equipment	Labor	Training	Technical Data	Supply	Without RIW	With RIW	Without RIW	With RIW
Optimized Physical Partitioning:										
• Improved repairability by location of high failure components outside of pressurized or oil filled vessels	Major		X				Depot	Contractor	Intermediate Depot	Contractor
• Improved handling by not allowing LRU weight to exceed man-handling capability	Major	X	X				Organizational	Organizational	Organizational	Organizational
• Improved repairability by minimizing number of LRUs	Major		X	X		X	Organizational	Organizational	Organizational	Organizational
Optimized Functional Layout:										
• Improved accessibility by optimizing LRU locations	Minor		X				Organizational	Organizational	Organizational	Organizational
• Improved repairability by attention to location of fuses and circuit breakers	Minor		X				Organizational	Organizational	Organizational	Organizational
• Improved accessibility and repairability by optimizing locations of rack mounted components	Minor		X				Organizational	Organizational	Organizational	Organizational
• Improved testability by optimizing location of BIT controls and indicators	Minor		X				Organizational	Organizational	Organizational	Organizational

WEAPONS CONTROL SUBSYSTEM: DESIGN-FOR-REPAIR CONCEPT/MAINTENANCE CONCEPT EVALUATION (Page 2 of 6)

Design-For-Concepts/Maintenance Concept Applications	Magnitude of Support Requirements Impact	Major Impact Areas					Maintenance Levels Impacted			
							2-Level Maintenance Organization		3-Level Maintenance Organization	
		Support Equip-ment	Labor	Train-ing	Tech-nical Data	Sup-ply	Without RIW	With RIW	Without RIW	With RIW
Optimized Electrical Interfaces:										
• Improved repairability by elimination of rack wiring	Minor		X			X	Organizational	Organizational	Organizational	Organizational
• Improved repairability by considering contact replacement problems in connector selection process	Minor		X			X	Organizational Depot	Organizational Contractor	Organizational Intermediate	Organizational Contractor
• Improved repairability by identification of better flat ribbon cable connectors	Minor		X			X	Depot	Contractor	Intermediate	Contractor
Optimized Mechanical Interfaces:										
• Improved accessibility by minimizing door/panel fasteners	Minor		X				Organizational	Organizational	Organizational	Organizational
• Improved accessibility by providing external fasteners or swing-away radomes	Minor		X				Organizational	Organizational	Organizational	Organizational
• Improved repairability by use of shop replaceable LRU fasteners	Minor		X				Depot	Contractor	Intermediate	Contractor
• Improved handling by protection of fragile components	Minor	X	X				Organizational	Organizational	Organizational	Organizational

WEAPONS CONTROL SUBSYSTEM: DESIGN-FOR-REPAIR CONCEPT/MAINTENANCE CONCEPT EVALUATION (Page 3 of 6)

Design-For-Concepts/Maintenance Concept Applications	Magnitude of Support Requirements Impact	Major Impact Areas					Maintenance Levels Impacted			
							2-Level Maintenance Organization		3-Level Maintenance Organization	
		Support Equipment	Labor	Training	Technical Data	Supply	Without RIW	With RIW	Without RIW	With RIW
Integrated Electronics Applications:										
• Improved accessibility by use at optimum locations allowed by miniaturizing electronics (and LRUs)	Major		X				Organizational	Organizational	Organizational	Organizational
• Improved repairability by miniaturizing electronics for packaging in fewer LRUs	Major		X	X		X	Organizational	Organizational	Organizational	Organizational
• Improved repairability by elimination of requirements for liquid cooling	Major	X	X				Organizational Depot	Organizational Contractor	Organizational Intermediate	Organizational Contractor
• Improved repairability by elimination of SRU marriage problems through use of digital signal processing techniques	Major		X				Depot	Contractor	Intemediate	Contractor
• Improved testability by power system designs which minimize the differences between aircraft and ground power	Minor		X				Organizational	Organizational	Organizational	Organizational
• Improved testability repairability and accessibility be elimination of fuses and circuit breakers through use of built-in overload protection circuits	Minor		X				Organizational	Organizational	Organizational	Organizational

WEAPONS CONTROL SUBSYSTEM: DESIGN-FOR-REPAIR CONCEPT/MAINTENANCE CONCEPT EVALUATION (Page 4 of 6)

Design-For-Concepts/Maintenance Concept Applications	Magnitude of Support Requirements Impact	Major Impact Areas					Maintenance Levels Impacted			
		Support Equipment	Labor	Training	Technical Data	Supply	2-Level Maintenance Organization Without RIW	2-Level Maintenance Organization With RIW	3-Level Maintenance Organization Without RIW	3-Level Maintenance Organization With RIW
• Improved handling by allowing reduced LRU weights	Major	X	X				Organizational	Organizational	Organizational	Organizational
• Minimized preventive maintenance requirements by replacing analog with digital signal processing	Major		X				Organizational	Organizational	Organizational Intermediate	Organizational
Fiberoptics/Multiplexing Applications:										
• Improved repairability by reducing: the number of conductors, connector contact densities, and the number of connectors	Major		X				Organizational	Organizational	Organizational	Organizational
Optimized BIT Versus External Test Equipment:										
• Improved testability by use of external test equipment where BIT cannot perform adequate tests	Major	X	X	X			Organizational	Organizational	Organizational	Organizational
• Improved testability by elimination of flightline test equipment where possible	Major	X	X	X			Organizational	Organizational	Organizational	Organizational

WEAPONS CONTROL SUBSYSTEM: DESIGN-FOR-REPAIR CONCEPT/MAINTENANCE CONCEPT EVALUATION (Page 5 of 6)

Design-For-Concepts/Maintenance Concept Applications	Magnitude of Support Requirements Impact	Major Impact Areas					Maintenance Levels Impacted			
							2-Level Maintenance Organization		3-Level Maintenance Organization	
		Support Equipment	Labor	Training	Technical Data	Supply	Without RIW	With RIW	Without RIW	With RIW
Optimized BIT Software Versus Hardware:										
• **Improved testability by optimizing use of software rather than hardware**	Major		X				Organizational	Organizational	Organizational	Organizational
Optimized Federated BIT Versus System BIT:										
• **Improved testability by providing better verification of inflight problems**	Major		X				Organizational	Organizational	Organizational	Organizational
• **Improved testability by use of LRU fault-indicators**	Major		X		X		Organizational	Organizational	Organizational	Organizational
• **Improved testability by providing higher consistency of failure data**	Major		X		X		Organizational	Organizational	Organizational Intermediate	Organizational
Microprocessor Applications:										
• **Improved testability by using microprocessor controlled BIT within LRUs**	Major	X	X	X	X		Organizational Depot	Organizational Contractor	Organizational Intermediate	Organizational Contractor
Optimized Test Commonality:										
• **Improved testability by use of LRU BIT compatibility for the shop test**	Major	X	X				Depot	Contractor	Intermediate	Contractor

WEAPONS CONTROL SUBSYSTEM: DESIGN-FOR-REPAIR CONCEPT/MAINTENANCE CONCEPT EVALUATION (Page 6 of 6)

Design-For-Concepts/Maintenance Concept Applications	Magnitude of Support Requirements Impact	Major Impact Areas					Maintenance Levels Impacted			
							2-Level Maintenance Organization		3-Level Maintenance Organization	
		Support Equipment	Labor	Training	Technical Data	Supply	Without RIW	With RIW	Without RIW	With RIW
Reliability Centered Maintenance Concept Application:										
• Improved preventive maintenance of mechanical components and desiccants	Minor		X			X	Organizational	Organizational	Organizational	Organizational

SUPPORT SYSTEM: DESIGN-FOR-REPAIR CONCEPT/MAINTENANCE CONCEPT EVALUATION

Design-For-Concepts/Maintenance Concept Applications	Magnitude of Support Requirements Impact	Major Impact Areas					Maintenance Levels Impacted			
							2-Level Maintenance Organization		3-Level Maintenance Organization	
		Support Equip-ment	Labor	Train-ing	Tech-nical Data	Sup-ply	Without RIW	With RIW	Without RIW	With RIW
Optimized Physical Partitioning:										
o Packaging of LRU electronics in SRUs for simplified repair at intermediate level	Major		X	X		X	Depot	Contractor	Intermediate	Contractor
o Elimination of LRU chassis and direct interconnection of SRUs with harnesses	Major		X			X	Depot	Contractor	Intermediate	Contractor
o Packaging of LRUs such that weight does not exceed two-man handling capability	Major	X	X				Organizational	Organizational	Organizational	Organizational
Integrated Electronics Applications:										
o Elimination of film recording medium by use of magnetic tape recorders for improved debrief-ing	Minor		X				Organizational	Organizational	Organizational	Organizational
o Elimination of intermediate level alignment requirements following depot repair by use of digital signal processing in place of analog functions	Minor		X				No Impact	No Impact	Intermediate	No Impact
o Reduced requirement for three-level maintenance organization through improved reliability and reduced system complexity (reduced number of LRUs)	Major		X	X		X	Organizational	Organizational	Organizational	Organizational

SUPPORT SYSTEM: DESIGN-FOR-REPAIR CONCEPT/MAINTENANCE CONCEPT EVALUATION (page 2 of 5)

Design-For-Concepts/Maintenance Concept Applications	Magnitude of Support Requirements Impact	Major Impact Areas					Maintenance Levels Impacted			
							2-Level Maintenance Organization		3-Level Maintenance Organization	
		Support Equipment	Labor	Training	Technical Data	Supply	Without RIW	With RIW	Without RIW	With RIW
Integrated Electronics Applications: (cont)										
o Reduced/eliminated servicing problems by elimination of oil cooling requirements	Major	X	X				Organizational	Organizational	Organizational, Intermediate	Organizational
o Elimination of LRU handling equipment by reducing volume/weight of electronics	Major	X	X				Organizational	Organizational	Organizational	Organizational
o Minimized need for scheduled inspection/alignment of LRUs by elimination of analog circuitry	Minor		X				Organizational	Organizational	Organizational, Intermediate	Organizational
o Reduced skill level requirements by elimination of system complexity through use of fewer LRUs	Major		X	X			Organizational	Organizational	Organizational	Organizational
Optimized Built-In-Test Applications:										
o Improved debriefing by providing aircrews with improved operational checks	Minor		X				Organizational	Organizational	Organizational	Organizational
o Minimized requirements for flightline test equipment	Major	X					Organizational	Organizational	Organizational	Organizational

SUPPORT SYSTEM: DESIGN-FOR-REPAIR CONCEPT/MAINTENANCE CONCEPT EVALUATION (page 3 of 5)

Design-For-Concepts/Maintenance Concept Applications	Magnitude of Support Requirements Impact	Major Impact Areas					Maintenance Levels Impacted			
							2-Level Maintenance Organization		3-Level Maintenance Organization	
		Support Equipment	Labor	Training	Technical Data	Supply	Without RIW	With RIW	Without RIW	With RIW
Optimized Built-In-Test Applications: (cont)										
o Elimination of requirements for maintenance personnel to assist aircrews with system operational checks	Minor		X				Organizational	Organizational	Organizational	Organizational
o Reduced training/skill requirements by provision of automatic fault-diagnostics, etc.	Minor			X	X		Organizational	Organizational	Organizational	Organizational
Optimized Federated BIT Versus System BIT:										
o Enhanced debriefing capabilities by providing LRU failure data to aircrews	Major		X				Organizational	Organizational	Organizational	Organizational
o Reduced training/skill requirements by use of built-in fault monitoring and LRU fault indicators	Major		X				Organizational	Organizational	Organizational	Organizational
o Improved BIT effectiveness reducing false removal rate	Major		X				Organizational	Organizational	Organizational, Intermediate	Organizational

SUPPORT SYSTEM: DESIGN-FOR-REPAIR CONCEPT/MAINTENANCE CONCEPT EVALUATION (page 4 of 5)

Design-For-Concepts/Maintenance Concept Applications	Magnitude of Support Requirements Impact	Major Impact Areas					Maintenance Levels Impacted			
							2-Level Maintenance Organization		3-Level Maintenance Organization	
		Support Equipment	Labor	Training	Technical Data	Supply	Without RIW	With RIW	Without RIW	With RIW
Standardized Electronics Modules/ Electronic Parts:										
o Reduced repair turn-around time by increasing parts availability with standardization/commonality concepts	Major					X X	Depot Depot	Contractor Contractor	Depot Depot	Contractor Contractor
Optimized Test Commonality:										
o Reduced reject rate at intermediate level for items received from depot by using like test procedures and tighter tolerances at depot level	Major		X			X	No Impact	No Impact	Intermediate, Depot	Intermediate, Contractor
o Reduced reject rate at organizational level for LRUs repaired at higher level by use of like test procedures (BIT, etc.) and tighter tolerances at intermediate/depot levels	Major	X	X				Organizational, Depot	Organizational, Contractor	Organizational, Intermediate	Organizational, Intermediate
Connecting Device Optimization:										
o Reduced test equipment maintenance requirements by use of more rugged test connectors	Minor		X				No Impact	Intermediate	No Impact	Intermediate

SUPPORT SYSTEM: DESIGN-FOR-REPAIR CONCEPT/MAINTENANCE CONCEPT EVALUATION (page 5 of 5)

Design-For-Concepts/Maintenance Concept Applications	Magnitude of Support Requirements Impact	Major Impact Areas					Maintenance Levels Impacted			
							2-Level Maintenance Organization		3-Level Maintenance Organization	
		Support Equipment	Labor	Training	Technical Data	Supply	Without RIW	With RIW	Without RIW	With RIW
Connecting Device Optimization: (cont)										
o Improved fault-isolation capability by improved accessibility to interface signals through test connectors	Minor		X				No Impact	Intermediate	No Impact	No Impact
Reliability Centered Maintenance Concept Application:										
o Minimized/eliminated scheduled maintenance on avionics equipment except where analysis clearly indicates positive benefits			X				Organizational	Organizational	Organizational, Intermediate	Organizational

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